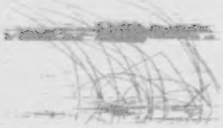
BUFFALO POUND WATER ADMINISTRATION BOARD

2013 annual report



CONTACT INFORMATION

The Buffalo Pound Water Treatment Plant is located approximately thirty kilometres northeast of the City of Moose Jaw, Saskatchewan, on Highway No. 301, seventeen kilometres north of the intersection with Highway No. 1.

The Plant's mailing address is P.O. Box 1790, Regina, Saskatchewan, S4P 3C8.
The telephone number is 306-694-1377; Fax 306-694-6050.

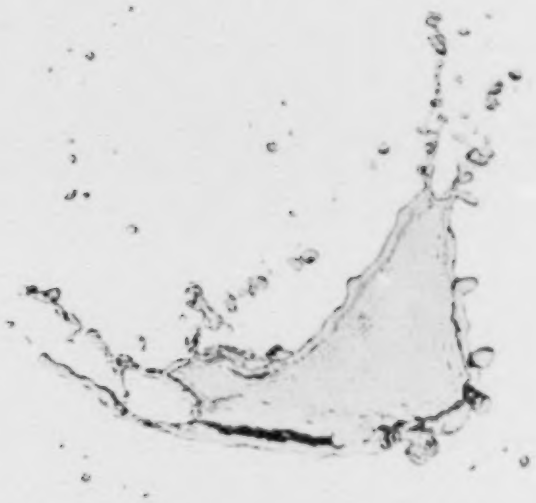
Plant management staff may be reached by email at the following addresses:

Ryan Johnson, General Manager: RyanJ@buffalopoundwtp.ca
Dan Conrad, Plant Chemist: DanC@buffalopoundwtp.ca
Tim Sedgewick, Plant Engineer: TimS@buffalopoundwtp.ca
Gene Berezowski, Plant Foreman: gberezowski@sasktel.net.
Laurie Wilkinson, Office Manager: LaurieW@buffalopoundwtp.ca

The City of Regina maintains a web site containing information about the Buffalo Pound Water Treatment Plant. This may be accessed by going to:
http://www.regina.ca/residents/water-sewer/water-publications/

Information about the Buffalo Pound Water Treatment Plant is also available from the City of Moose Jaw's website. This may be accessed by going to:
http://www.moosejaw.ca/?service=water-management

BUFFALO POUND WATER ADMINISTRATION BOARD

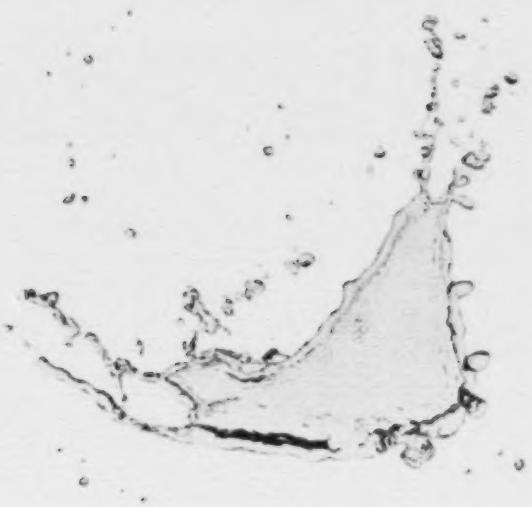


2013 annual report

City of Regina | REGINA
Infinite Horizons

Moose Jaw
SURPRISINGLY UNEXPECTED

BUFFALO POUND WATER ADMINISTRATION BOARD



2013 annual report

BUFFALO POUND WATER TREATMENT PLANT
ANNUAL REPORT - 2013

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Appendix 2	Audited Financial Statements - 2013

BOARD CHAIRPERSON'S LETTER

On behalf of the Board members I am pleased to present the 2013 Annual Report of the Buffalo Pound Water Administration Board.

The Buffalo Pound Water Treatment Plant provided abundant quantities of water to our customers that met or exceeded regulatory requirements and our own standards. That our outcomes are achieved effectively and efficiently, and with a high level of system reliability, is a testament to the dedication, expertise and creativity of our staff.

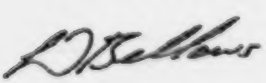
The Board dealt with a number of challenges and initiatives in 2013. The most significant was a transition in our senior staff position; the Plant Superintendent reporting directly to the Board. In the 60 year history of the Plant, there have only been three people in this position. After more than 20 years of service, Mr. Ben Boots P.Eng. FEC retired as Plant Superintendent. During his tenure he maintained a high quality and reliability of service in the production of water, and built strong relationships with the Board, staff and other stakeholders. The Board thanks him for his commitment, tireless service and integrity in leadership to the Plant and broader professional and industry communities. With this retirement, the Board reviewed the needs of the Plant and updated the role profile and position name for this leadership position. After an intensive recruitment process, the Board was pleased to appoint Mr. Ryan Johnson CD, M.A.Sc., P.Eng. as the new General Manger of the Buffalo Pound Water Treatment Plant. Mr. Johnson comes to us with great experience in the municipal sector as a City Engineer and most recently from the Department of Public Works, Government of Canada.

The Board also advanced the governance review started in 2012. With the support of the Owners, a consultant was commissioned to review and make recommendations on short and long term governance of the facility. That work was completed at year end and detailed planning and implementation of governance improvements will be initiated in 2014.

Aligned with the aforementioned leadership and governance changes, the Board also accepted a more active role in delivering the current Capital Upgrade project. Project management and administration of the project will be led by the General Manager and Owner representatives under the direction of the Board.

In 2013 the Board representative from Moose Jaw changed with Mr. Mahabub Zaman leaving the Board and Mr. Tyrone Stokes joining the Board. The Board thanks Mr. Zaman for his participation and contributions.

The Board is grateful for the continued dedication of Plant management and staff in efficiently operating and maintaining the treated water supply for Moose Jaw and Regina.



Derrick Bellows, P.Eng., FEC, ICD.D
Chairperson
Buffalo Pound Water Administration Board

BUFFALO POUND WATER ADMINISTRATION BOARD
2013 ANNUAL REPORT

INTRODUCTION

This report summarizes the activities and major events at the Buffalo Pound Water Treatment Plant during 2013. The report outlines the Mission and Goals, achievements and areas of concern. It is intended as an information source for city administration personnel, elected officials and the general public. This report also contains the Drinking Water Quality and Compliance Report required by provincial regulations.

BUFFALO POUND WATER ADMINISTRATION BOARD

The Buffalo Pound Water Administration Board was created in 1951 by an agreement between the City of Regina and the City of Moose Jaw (the "Owners"). In accordance with the agreements, the Board is comprised of two senior members of the City of Regina administration and one senior member of the City of Moose Jaw administration.

BOARD MEMBERS

Derrick Bellows, P.Eng., FEC, ICD.D
Board Chairperson
City of Regina appointee

Mr. Ty Stokes, P.Eng., MBA
Board Member
City of Moose Jaw appointee

Mr. Chuck McDonald, B.A., B.B.Admin, CMA
Board Member
City of Regina appointee

WATER TREATMENT PLANT MANAGEMENT

Mr. R. Johnson, CD, M.A.Sc., P.Eng.	General Manager
Mr. D. Conrad, P.Chem.	Plant Chemist
Mr. T. Sedgewick, P.Eng.	Plant Engineer
Mr. E. Berezowski	Plant Foreman
Ms. L. Wilkinson	Office Manager

GENERAL MANAGER'S LETTER

I first would like to say hello on behalf of the management and staff of the Buffalo Pound Water Treatment Plant. I am no stranger to the Buffalo Pound Water Treatment Plant, or the Buffalo Pound Water Administration Board, as I had served as a Board Member from 2002 until 2010 with the last two and a half years as the Board Chair. As the Plant's first General Manager, it has been my great pleasure serving the Board in carrying out its mission and goals for the last half of 2013.

The Buffalo Pound Water Treatment Plant is the source of drinking water for the Cities of Regina and Moose Jaw, as well as other smaller nearby communities serving over 230,000 people. It is the second largest facility in the Province and has been in operation since 1955. The Plant has aged, has had routine preventative maintenance, but requires major capital improvements. The last three major capital improvement projects at the Plant were the second raw water intake in 2001, twinning the raw water supply pipeline in 1999 and the Plant expansion in 1988. Currently, we are engaged in the Major Capital Upgrade Project to address some the facility's capital needs to continue ensuring safe drinking water for our customers. The scope of the project has been better defined based on the results of the pilot testing, condition assessments and studies which have been prioritized to meet the budget approved by the Cities of Moose Jaw and Regina. The project is now progressing into the predesign stages while there still remains an unfunded program of work which will need to be addressed in the near future.

In 2013, there were several changes at the Plant with the most significant being the retirement of the Plant Superintendent. The General Manager position was created with different duties, expectations and responsibilities than the previous Plant Superintendent. The Board and I have been very busy reviewing the Board Governance Model with the assistance of a consultant specializing in Board Governance. Recommendations for improvements were developed and have been presented to the Owners for consideration. This initiative will continue into 2014.

I would like to extend my sincere appreciation to all Plant staff for their dedication and hard work to help us all meet and achieve the Buffalo Pound Water Administration Board's Mission and Goals in 2013.

Ryan Johnson, CD, M.A.Sc., P.Eng.
General Manager

MISSION AND GOALS

MISSION

* To provide for the Cities of Regina and Moose Jaw, a reliable and affordable supply of safe, high-quality drinking water which meets the needs and expectations of consumers.

GOALS

* Treated water that meets the quality expectations of the citizens of Moose Jaw and Regina, as well as meeting, or exceeding, all government regulated parameters.

* Operational practices and controls that ensure a continuous and safely-treated supply of water within an environmentally-responsible and cost-efficient operation.

* Judicious monitoring of the treated water from the Plant to the end of the Cities' distribution systems. Appropriate monitoring of the water in Buffalo Pound Lake, the Upper Qu'Appelle River and Lake Diefenbaker to identify long-term trends and areas of concern to protect the water supply.

* Water quality research to identify possible chemical and microbiological contaminants and to test and implement the best available treatment technologies, thus ensuring that the Water Treatment Plant can meet current and future expectations for regulated parameters.

RESOURCES

WATER SOURCE

Water for Regina and Moose Jaw is taken from Buffalo Pound Lake, a shallow reservoir in the Qu'Appelle Valley. The lake is 29 km long, 1 km wide but has an average depth of only 3 metres. The surface area of Buffalo Pound Lake is 2900 hectares inferring it has a capacity of 90 million cubic metres at the "full supply level" of 509.3 metres above sea level. Water levels in Buffalo Pound Lake are controlled by the Saskatchewan Watershed Authority and maintained by the release of water from the Qu'Appelle Dam on Lake Diefenbaker. Mean annual water releases of 5 to 1 cubic metres per second are typical. Thus, the average residence time of water in the lake varies from six to thirty months. Very little water enters Buffalo Pound Lake from rain or spring runoff except in abnormally wet years. The principal source of the water is rain and snow-melt in the mountains of Alberta, collected by various tributaries draining to the South Saskatchewan River and stored in Lake Diefenbaker. As such, the water is potentially affected by discharges from point sources (upstream cities) and non-point sources (agricultural and recreational).

Buffalo Pound Lake is generally free of industrial pollution but is naturally rich in nutrients (phosphate, nitrogen and dissolved organic carbon) which encourage the growth of phytoplankton (typically diatoms in the winter and green algae or cyanobacteria in the summer). Weed growth can also be extensive. Algae and weeds pose many treatment challenges such as high chemical demands and undesirable tastes or odours. The lake and watershed appear to also be impacted by ground waters infusing minerals.

PLANT TREATMENT

Raw water from Buffalo Pound Lake passes through a series of treatment stages designed to remove impurities such as algae, bacteria, clay particles and dissolved organic materials. The objective of this treatment is to produce water that is clear, colourless, odour-free, aesthetically pleasing and safe to drink.

The treatment process consists of six stages: chlorination, cascade de-gasification, coagulation/flocculation, clarification, filtration and carbon adsorption.

Lake water enters a pumping station located on the south shore of Buffalo Pound Lake through two submerged intakes. Raw water is chlorinated and then pumped to the treatment plant via two pipelines connecting the pumping station to the main treatment plant. The pipelines are 1.05 and 1.35 metres in diameter, extend a distance of 3,000 metres and rise 82 metres. After reaching the Plant, water is initially divided into two streams, each of which has cascade de-gasification, coagulation/flocculation and clarification. The streams are then recombined for the final stages of treatment, including filtration, carbon adsorption and further chlorination.

Cascade operation is normally used during periods of excessive dissolved gas levels in the raw lake water. Excessive dissolved gases are most commonly produced by photosynthetic bacteria and algae. During cascade de-gasification, the water falls over a series of steps which releases excess dissolved gasses and prevents the formation of gas bubbles in later treatment processes. Clarification and filtration processes could be impeded by gas bubbles that attach to particles of floc, causing them to float, rather than sink, and by causing air binding in the filters.

If conditions warrant, Powdered Activated Carbon (PAC) is added to reduce taste and odour. The use of PAC, while relatively infrequent, is occasionally necessary when granular activated carbon contactors are off line or to temporarily reduce the odour loading when the contactors are on-line.

Coagulation and flocculation are the next steps in treatment. Aluminium sulphate (alum) is vigorously mixed with the water. In the process of coagulation, the alum neutralizes surface charges on particulate matter contained in the water and forms a fluffy precipitate (floc) that entraps suspended algae and clay particles. The water is then stirred slowly in flocculation tanks to allow floc particles to become larger and denser prior to their removal.

The floc-bearing water then flows through clarifiers, where most (more than 95%) of the floc with its entrapped impurities is allowed to settle by gravity to the bottom while clear water is constantly removed from the top. Settled floc is removed from the clarifiers as sludge and pumped to holding lagoons where it is further separated into clear water (returned to the lake) and solid sludge (removed for disposal).

Any floc that was not removed by clarification is separated in the filtration stage. Water is passed through mixed-media filters consisting of a top layer of coarse anthracite followed by successive layers of fine silica sand, and even finer garnet sand. Any remaining particulate matter or floc is trapped by the filters. Filters are cleaned by backwashing with clean water. The filtration step completes the removal of particulate impurities. The removal of dissolved organic impurities, which

are responsible for taste and odour, is accomplished next in the carbon adsorption stage of treatment. Large rectangular tanks (contactors) contain Granular Activated Carbon (GAC) to a depth of 3 metres. Water is lifted by Archimedes screw pumps from the bottom of the filters and taken to the top of the contactors where it is allowed to flow by gravity down through the GAC. GAC contains many microscopic pores which adsorb dissolved chemical impurities. Water is in contact with the GAC for 15 to 30 minutes, depending on flow rates, and emerges freed of the dissolved organic materials which cause objectionable taste and odour. The GAC filtration process at Buffalo Pound was designed for taste and odour removal and is used during periods of poor taste and odour in the raw water; the normal period of operation is from May until December.

All stages of water treatment are now essentially complete. Prior to delivery by pipeline to the consumers, chlorine levels are adjusted, if necessary, to provide adequate disinfection and to counteract any possible contamination encountered during its travel to the cities' reservoir and distribution systems. Water delivered to the City of Moose Jaw is also fluoridated prior to pumping.

The carbon used in the contactors retains its effectiveness for taste and odour improvement up to six months, after which time it must be regenerated or replaced. GAC is a relatively expensive treatment component and it has been found to be cost effective as well as environmentally responsible to regenerate the used GAC rather than to discard it and purchase new. Regeneration is accomplished by heating the spent GAC to 850o C in an oxygen-free atmosphere contained in a fluidized bed gas-fired furnace. Spent GAC is transferred by pipeline as a slurry from the contactors to the furnace, regenerated to process specifications, and returned to the contactors for reuse. Carbon regeneration is usually performed at Buffalo Pound from mid-October to mid-April.

ENVIRONMENTAL PROTECTION AND CONSERVATION

The Buffalo Pound Water Treatment Plant, like any large industrial facility, has the potential to affect the environment. The plant has facilities in place to handle all process wastes including alum sludge, off gases from the carbon regeneration facility, laboratory wastes, various solid wastes generated by plant operations, and sewage. The plant uses a considerable quantity of electrical energy in its operation; conservation efforts give returns in the form of reduced demands on the environment and lower operating costs.

A series of sludge lagoons is used in the treatment of the alum sludge waste stream. This form of sludge management can be very effective in ensuring that the sludge is retained. Sludge is exposed to a natural freeze-thaw cycle that dewaters it to produce a nearly dry granular material which is transported to a landfill site. Buffalo Pound is one of the few Water Treatment Plants in Canada with the ability to manage waste sludge in this manner.

Because the Plant's lagoons were identified as being undersized in the 2005 and 2010 Water Works System Assessments, the Upgrade Project includes plans to improve residuals management.

The natural gas-fired furnace in the carbon regeneration facility produces off gases which are thoroughly scrubbed before release to the atmosphere.

Waste disposal agencies are contracted to handle laboratory wastes and solid wastes generated by the Plant. As it becomes necessary, firms specializing in hazardous waste disposal are contracted to dispose of chemical wastes.

Sewage generated by the Plant is pumped to treatment and evaporation lagoons located on Plant property. The primary lagoon has a geotextile fabric and bentonitic clay liner to prevent seepage.

Efforts are continually made to utilize electrical energy in the most efficient fashion possible. The biggest consumers of power are the large pumps located at the lake pumping station and the units that pump water to the cities.

WATER QUALITY MONITORING

A well-equipped accredited laboratory is located on site and used to monitor the quality of raw and treated water as well as water quality at several intermediate steps in the treatment process. Major process control parameters (turbidity, pH, chlorine residual, particle counts, dissolved oxygen and temperature) are monitored continuously by instrumentation communicating with the Plant process computer system. Analyses are performed for most regulated parameters on a daily to monthly schedule; for other parameters (most trace-level organics and metals) samples are sent to commercial laboratories. Analytical results are compared to Canadian Federal guidelines and to Saskatchewan Drinking Water Quality Standards and Objectives. All criteria for safe drinking water were satisfied by the Buffalo Pound Water Treatment Plant in 2013.

Analyses for a wide variety of physical, chemical, and microbiological parameters are performed in the Buffalo Pound Laboratory. Some 65 different constituents are routinely determined and approximately 25,000 tests are done yearly. The 2013 results are summarized in Appendix 1, together with results for metals and organics obtained from commercial laboratories.

The quality of the regenerated granular activated carbon is monitored by Plant staff for a variety of physical and chemical parameters.

A vigorous in-house quality control program is maintained to ensure data generated by the Buffalo Pound Water Treatment Plant Laboratory is valid. The laboratory is accredited by the Canadian Association for Laboratory Accreditation (CALA) for 31 different chemical and bacteriological parameters. CALA audits occur every two years and are required for the laboratory to maintain its ISO accreditation. The audit and the preparation for the audit require a large amount of staff time and resources. Items of "non-conformance" are generally minor in nature and addressed within the given time frames.

PLANT OPERATIONS AND MAINTENANCE

WATER PRODUCTION

Water Production and sales (in megaliters) were as shown in Table 1. (See also related Graphs 1 and 2.) Total sales to the cities in 2013 were 29,445 ML to Regina and 5,709 ML to Moose Jaw. Sales to Regina increased 0.9% from 2012, and sales to Moose Jaw increased 3.0%.

Three water sale records were broken in 2013; January, March and December.

Sales to the SaskWater Corporation in 2013 decreased by 2.6%, to 226.6 ML. Sales to SaskWater represent less than one percent of the Plant's production.

Graph 3 shows annual water production by year since the Plant began operation in 1955.

The processes employed at the Buffalo Pound Water Treatment Plant are modified during the year as determined by the water quality in Buffalo Pound Lake.

Ice cleared the lake on May 11, days later than the average. Chemical dosages remained higher than in normal years. The granular activated contactors were put into operation on May 14 and were turned off December 13.

The lake froze over on November 6.

CARBON REGENERATION FACILITY

The carbon is regenerated in the winter so that it can be used to remove taste and odour from the water in the following summer. The 2012/2013 regeneration system was from October 17, 2012 to May 1, 2013. The 2013/2014 regeneration season commenced November 5.

MAINTENANCE AND CAPITAL PROJECTS

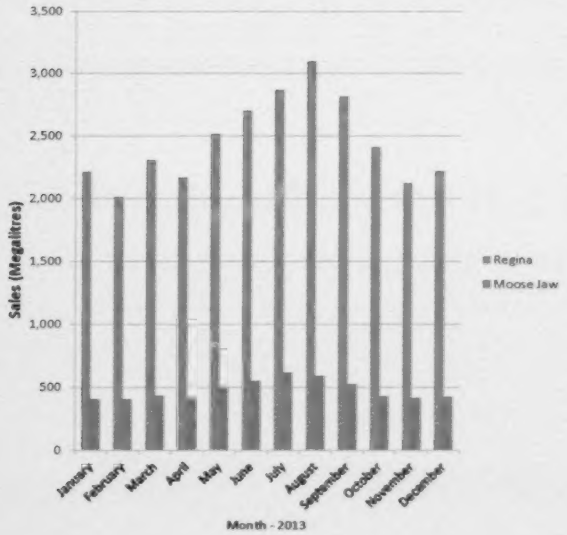
Effective maintenance plays a key role in keeping the Water Treatment Plant running efficiently producing high quality water. All vessels are drained, cleaned and inspected at least annually. All critical Plant equipment is inspected, tested and maintained at least annually to help ensure satisfactory operation during peak flow demands. All water quality monitoring instruments are checked or calibrated in accordance with our Quality Assurance/Quality Control policy. The results from major on-line instruments are compared to laboratory instruments.

Table 1: 2013 WATER SALES (MEGALITRES)
BUFFALO POUND WATER TREATMENT PLANT

MONTH	REGINA	MOOSE JAW	SASK WATER CORP.
January	2,212.3	406.6	14.9
February	2,013.9	405.2	13.6
March	2,305.4	430.3	16.1
April	2,164.3	416.1	15.6
May	2,515.8	504.4	23.2
June	2,700.9	552.8	23.3
July	2,870.3	617.8	24.8
August	3,097.2	589.3	24.1
September	2,814.7	523.8	20.4
October	2,409.2	425.8	20.3
November	2,122.5	412.7	14.1
December	2,218.3	424.4	16.3
Totals	**29,444.9**	**5,709.2**	**226.6**

Graph 1

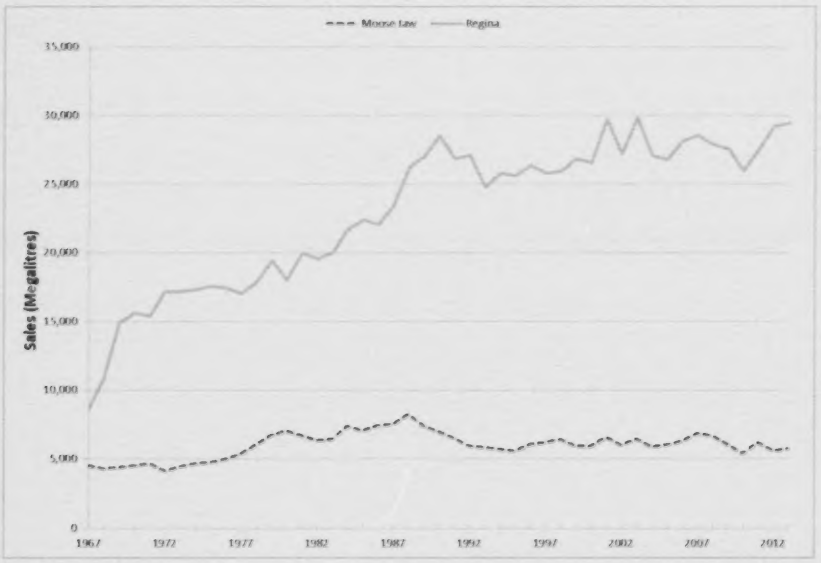
BUFFALO POUND WATER TREATMENT PLANT
MONTHLY SALES TO REGINA & MOOSE JAW - 2013



TOTALS
Regina **29,445 ML** Moose Jaw **5,709 ML**

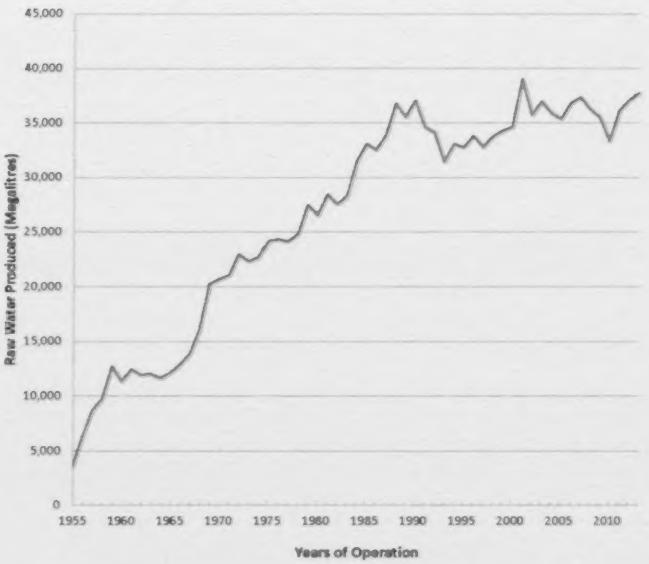
Graph 2

BUFFALO POUND WATER TREATMENT PLANT
ANNUAL SALES TO REGINA & MOOSE JAW
1967 - 2013



Graph 3

BUFFALO POUND WATER TREATMENT PLANT
ANNUAL RAW WATER WITHDRAWN
1955 - 2013



Several projects were completed with funds from the Capital Replacement Reserve for a total cost of $150,726. Further progress was made on the project updating the process and instrumentation drawings, a few flow meters were replaced, some valves were replaced, security upgrade project commenced, the East alum tank was relined and the portable 150kW standby generator was commissioned.

In addition to the projects funded by the Capital Replacement Reserve other projects were completed.

The design for office renovations was completed.

The Buffalo Pound Water Administration Board Governance Review Project was undertaken and the final report with short and medium term recommendations was completed for the Owners to review.

In July, a 480V transformer located at the Plant's substation which services the City of Moose Jaw's three main pumps failed. The transformer was out of commission from July 2 to July 19. The newly commissioned standby generator was able to be used to supply power to the City of Moose Jaw's smallest pump during this time period.

MAJOR CAPITAL UPGRADE PROJECT

The Cities have committed funds to upgrade the Buffalo Pound Water Treatment Plant in 2010. The project initially intended to: add ultraviolet disinfection to ensure the deactivation of protozoa cysts; improve the handling of treatment plant residuals; add an additional screw pump; increase the clear well storage capacity; provide corrosion control and address overall water treatment upgrades for the Plant. The electrical failures experienced in 2011, the vulnerability assessment study in 2012 as well as the transformer failure in 2013, determined that capital expenditures need to be made to improve the overall reliability of the electrical supply systems in the Plant and lake pumping station. An electrical master plan study was carried out and identified issues that need to be addressed as part of the Water Treatment Plant upgrades.

As the project progressed, pilot testing, condition assessments and studies clarified what works were the most critical. By 2013, the predesign concept cost estimates for the project exceeded the funds available. The scope was reviewed to determine the most urgent items required to be included which are also within the approved budget.

The current Major Capital Upgrade Project scope now includes the ultraviolet disinfection system; an additional Archimedes screw pump; replacement of the Plant's electrical substation and related work for approximately $33.4 Million. The remaining scope of work is currently placed in an unfunded program of work which will be addressed at a later date. None of the work in the Major Capital Project or the unfunded program of work includes expansion of the Plant.

Accomplishments for 2013 include: the ultraviolet reactors were tendered and awarded; the electrical master plan was completed; the residuals management process was selected; the Plant's hydraulic capacity was reviewed and confirmed at 205 ML/day (maximum flow) and the ultraviolet system and the Archimedes screw pump were advanced to predesign phase.

WASTEWATER FACILITY

The clarifier underflow removes particulate matter (alum sludge) from the raw water. The effluent stream is directed to alum sludge lagoons where the sludge is deposited and the clear water overflow returns to Buffalo Pound Lake. The sludge from the stockpile location was removed to the Moose Jaw landfill. The sludge from the south-west summer lagoon was excavated to the stockpile location.

REGULATORY AND GOVERNMENTAL AFFAIRS

In December 2002 the Provincial Government introduced new Water Regulations dealing with water and wastewater facilities. These comprehensive regulations are intended to improve water quality and reporting accountability. The Water Security Agency conducted two inspections of the Plant once in February and the second in October; no deficiencies were noted. Since these regulations have been in place, not one deficiency has been observed on any inspection.

The Buffalo Pound Water Treatment Plant's Permit to Operate is in effect to January 1, 2015.

One requirement of the regulations is that the laboratory analytical work required by a Water Treatment Plant's Permit to Operate must be done by an accredited laboratory. The Buffalo Pound laboratory fulfilled all requirements to maintain accreditation from the Canadian Association for Laboratory Accreditation (CALA). The laboratory participated in four sets of proficiency test analyses.

The Water Regulations require that the plant submit results of the weekly bacteriological, monthly trihalomethane and quarterly major ion analyses promptly to The Water Security Agency and that a Drinking Water Quality and Compliance

Report be published annually. The required Drinking Water Quality and Compliance Report is provided in the in the Appendix. The Buffalo Pound Water Treatment Plant met all sample submission requirements of the Plant's operating permit. The Plant is in full compliance with the Water Regulations.

Plant operations are subject to the Federal National Pollutant Release Inventory (NPRI) Legislation, Canadian Nuclear Safety Commission (CNSC), as well as the Environmental Emergency Regulations. The required inventory submissions were made to the NPRI program. Radioactive substances are used in the laboratory's electron capture detectors. Although the licence requirements for electron capture detectors have been terminated by the CNSC, swipe tests are still conducted as part of the general maintenance program. Swipe tests, ensuring the integrity of these detectors, were sent to Saskatchewan Labour for analysis; no leakage above the guidelines was detected.

HUMAN RESOURCES

In 2013, the Buffalo Pound Water Treatment Plant employed a total staff of 30, consisting of four out-of-scope managers, nine operating staff, five laboratory technologists, seven journeyman maintenance persons, three maintenance persons, and two labourers. The in-scope staff is represented by UNIFOR Local No. 595.

The Buffalo Pound Water Administration Board, with the assistance from an executive recruitment firm, changed the duties, responsibilities and accountability of the former Plant Superintendent Position and developed the General Manager position. The Board used the same firm to assist in the recruitment process to hire the new General Manager.

The Buffalo Pound Water Administration Board approved the creation of the Office Manager position to support the Plant, General Manager and the Board.

The Buffalo Pound Water Administration Board was presented with a Certificate of Achievement Award from the provincial Worker's Compensation Board for the Plant's safety record. This is the twenty-sixth consecutive year the Plant has been presented with this award. There was one lost-time accident in 2013. Some staff had first aid recertification training.

Staff at the Plant participate in the Regina Civic Employees Pension Plan. The former Plant Superintendent represented the Buffalo Pound Water Administration Board participating in many meetings to attempt to address the Pension Plan's large unfunded liabilities. Negotiations in 2013 were continued but were unable to meet the Superintendent of Pensions' requirements by the end of the year.

A "Years of Service" awards was held on February 9, 2013. This was the 2nd annual awards evening specifically held for Buffalo Pound staff.

WATERSHED PROTECTION

The Buffalo Pound Water Treatment Plant continues to be involved in consultation processes dealing with watershed protection in the Upper Qu'Appelle River and Buffalo Pound Lake.

MISCELLANEOUS

The Fluoride feeder line, which is used for the City of Moose Jaw had failed and was out of service from February 6 until November 6 until it could be properly repaired.

The Plant Engineer, Plant Chemist and the General Manager attended the Western Canada Water and Wastewater Association conference in Edmonton.

The General Manager and Board Chair attended the Windows on Ottawa workshop and meetings in November.

Five staff members attended the Saskatchewan Water and Wastewater Association annual conference in November.

RESEARCH AND ANALYTICAL PROGRAM

PLANT UPGRADE DOWNSTREAM USERS IMPACT STUDY

Water treatment with coagulants such as alum produces insoluble waste materials that must be properly treated and disposed. The wasted solids consist of quite insoluble aluminum hydroxide plus the particulate matter removed from raw lake water. These waste materials are collected and removed during the clarification (settling) process as well as during filtration. Clarifier blow downs and filter backwash water is directed to one of four summer lagoons or two winter lagoons. There, solids are settled out and the sledge is partially dewatered and are frozen in place during the winter to further remove water. The following summer these solids are taken to an on-site drying bed to be frozen for another year before excavating and transporting to the Moose Jaw landfill.

The present lagoon systems are undersized as they were constructed during a time when filter backwashes were recycled to the head end of the Plant. This practice was discontinued in the 1990s after incidents in Cincinnati and Milwaukee demonstrated the risks of water borne disease from pathogens such as Cryptosporidium spp. Protozoa are quite resistant to disinfection using chlorine. The volume of water and the amount of coagulant used at Buffalo Pound is 50% greater than when the lagoons were constructed. Lagoon design has also improved over the last 30 years. More attention is directed to construction materials, proper overflow rates, solids settling and dewatering of the settled solids.

The need for improved solids handling was identified in various studies. Before commencing the construction of better designed lagoon systems, a downstream user's impact study must be conducted. Laboratory staff carried out monthly sampling and analysis of our present lagoon systems to understand the potential for lagoon effluents to influence lake water quality. Results from this study are under review. Unfortunately, insufficient funds exist in the present upgrade project budget to carry out construction at this time.

ALTERNATIVE CHEMICAL TREATMENTS

Challenging raw water conditions in Buffalo Pound Lake must be dealt with to provide drinking water of high quality. Alum is used to assist the removal of particulates and some pathogenic organisms. It also removes some portion of naturally occurring organic matter that can produce undesirable by-products during chemical disinfection. Alum doses up to 160 mg/L have been required to provide effective coagulation and thus ensure good filtered water quality. Unfortunately, these doses of alum which are much higher than normally required will lower the treated water pH. These lower pH levels are still within Saskatchewan's drinking water objectives. However, the potential of corrosion of specific pipe materials will be greater. Problems with elevated levels of iron have been noted in Moose Jaw's distribution system. Unlike Regina, cast iron pipe still makes up a large portion of Moose Jaw's system in the older sections of the City.

Iron mobilization within Moose Jaw may also be exacerbated by varying flow regimes. Dissolved or particulate iron is not a health hazard but can impair the taste of water as well as staining plumbing fixtures and clothes.

Laboratory staff has evaluated many alternative coagulant products that would not depress pH but still effectively treat the poor quality raw water. The best coagulants tested were based on polyaluminum chlorides which are partially neutralized solutions of aluminum chloride. Being less acidic than alum, these coagulants do not depress pH to the same extent as alum.

Equivalent formulations of poly aluminum chloride from two different manufacturers were tested in full scale evaluations. The first evaluation during poor raw water quality conditions during March produced the desired high quality coagulated water. The treated water pH was higher than that produced by alum addition and was less corrosive. The second evaluation during November was conducted under conditions of better raw water quality. This evaluation also demonstrated good treated water turbidity and higher pH. However, particle counts which are indicative of coagulation performance were higher than that achieved with alum. Additional testing is planned to identify the conditions for good particle removal.

PERSONAL CARE PRODUCTS AND PHARMACEUTICALS IN THE BUFFALO POUND LAKE WATERSHED

We all use various pharmaceuticals and chemicals in our everyday lives. These chemicals eventually find their way into surface waters and may impact downstream users of that water. Some compounds such as caffeine, pain killers (ibuprofen and acetaminophen) are often found immediately downstream of human wastewater sources. Measuring these compounds provides a means of measuring the impact of human activities on the receiving water. The risk to humans from the various metabolites of pharmaceuticals and other products that are excreted or disposed of in wastewater may be small. However, changes in the health of various organisms (e.g. fish) in the immediate vicinity of the waste water discharge have been observed.

Surveys for various pharmaceutical metabolites and personal care products have been carried out since 2009 in the Upper Qu'Appelle River and Buffalo Pound Lake to identify if any potential problem or concern exists. The suite of analytes tested for has been expanded over the years and now includes musks, hormones, sweeteners and many other compounds.

This year the Moose Jaw River flooded the Qu'Appelle River and backfilled Buffalo Pound Lake. Various pharmaceuticals were detected in Buffalo Pound Lake during three sampling periods in June July and September. Codeine and acetaminophen, both painkillers were detected at part per billion levels. Norflaxacin, an antibiotic, was also found.

Within the Upper Qu'Appelle River which enters Buffalo Pound Lake, 2,4-D a herbicide, and DEET, the common insect repellent, as well as acetaminophen were found. All of those compounds were detected at the parts per trillion level.

This year the Moose Jaw River flood had more of an impact on the transfer of pharmaceuticals to Buffalo Pound Lake than the normal inflows from Lake Diefenbaker. Although pharmaceutical compounds were found at low levels in Buffalo Pound Lake, the fact that they can be detected shows that there are impacts of human use on our water source. This emphasizes the importance of watershed practices that minimize those impacts.

WATERSHED MONITORING

Monitoring of the Upper Qu'Appelle River watershed including Buffalo Pound Lake is typically carried out on an annual basis. In 2013, watershed sampling was carried out twice on July 16th and September 25th. Lake water quality was impacted by the low diversion rates of Lake Diefenbaker water via the upper Qu'Appelle River after the spring-time flood from the Moose Jaw River. Lake Diefenbaker water is of generally better quality than Buffalo Pound Lake water.

The long-term watershed data collected by the Buffalo Pound Water Administration Board staff represents a valuable resource for examining water quality trends or issues. Copies of this database are requested regularly by government agencies and water quality researchers. The data is provided freely as a public service and as a means of encouraging new research into limnology and water treatment. The Buffalo Pound Water Treatment Plant is a research partner with the University of Saskatchewan for their project "Understanding lake metabolism and nuisance algal metabolites: New tools for management of potable water sources". This NSERC funded project is headed by Dr. Helen Baulch from the University of Saskatchewan. Plant Staff will assist with data gathering from tethered buoys in the lake, increased frequency of raw water sampling and analysis as well as assisting with study planning.

Diversions from Lake Diefenbaker via the Upper Qu'Appelle River and Buffalo Pound Lake will increase if irrigated agriculture and industries are developed in Southern Saskatchewan. The watershed data collected since 1979 will provide a baseline for assessing the impacts of these future developments.

OPERATIONS BUDGET

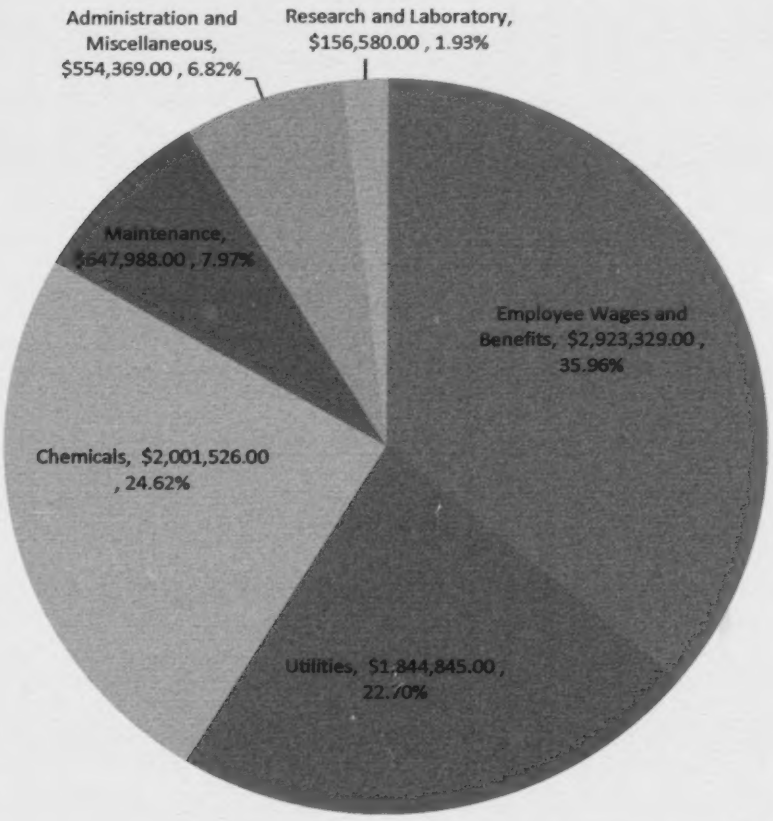
The 2013 water rate for the cities of Regina and Moose Jaw increased by 3.91% from the 2012 rate to $225.02 per Megaliter. The electrical rate was set at $0.07908 per KWH for 2013, no increase from 2012.

Total sales to the cities in 2013 were 29,445 ML to Regina and 5,709 ML to Moose Jaw. Sales to Regina increased 0.9% from 2012, and sales to Moose Jaw increased 3.0%. Operations at the Buffalo Pound Water Treatment Plant resulted in a surplus of $19,096 in 2013.

Audited financial statements are contained in Appendix 2. Graph 4 summarizes expenses for 2013 as a percent of the total budget.

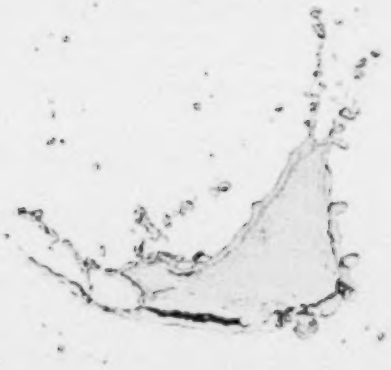
Graph 4

BUFFALO POUND WATER TREATMENT PLANT
SUMMARY OF OPERATING EXPENSES - 2013


Administration and Miscellaneous, $554,369.00 , 6.82%
Research and Laboratory, $156,580.00 , 1.93%
Maintenance, $647,988.00 , 7.97%
Employee Wages and Benefits, $2,923,329.00 , 35.96%
Chemicals, $2,001,526.00 , 24.62%
Utilities, $1,844,845.00 , 22.70%

TOTAL EXPENSES: $8,128,637.00

APPENDIX 1



Water Quality Data - 2013

BUFFALO POUND WATER TREATMENT PLANT LABORATORY

Analytical Data - 2013

Moose Jaw / Regina, Saskatchewan
December 2013

BUFFALO POUND WATER TREATMENT PLANT

DRINKING WATER QUALITY AND COMPLIANCE REPORT FOR 2013

INTRODUCTION

The Water Security Agency requires each Permittee to monitor water quality as stipulated under its Permit to Operate a Waterworks. Permittees are also required to prepare an annual report to their customers and the Saskatchewan Water Security Agency summarizing the analytical results of the monitoring in a report entitled "Drinking Water Quality and Compliance Report."

For more information about the meaning and type of sample refer to the Water Security Agency's "Municipal Drinking Water Quality Monitoring Guidelines, or the associated website http://www.saskh2o.ca/DWBinder/epb202.pdf.

The guidelines for Canadian Drinking Water Quality are developed by the Federal –Provincial-Territorial Committee on Drinking Water and are published by Health Canada. The province of Saskatchewan utilizes the guidelines in issuing Permits to Operate for regulated water works. Guidelines for chemical and physical parameters are either:

1. health based and listed as a Maximum Acceptable Concentration (MAC);
2. based on aesthetic considerations and listed as an Aesthetic Objective (AO); or
3. established based on operational considerations and listed as an Operational Guidance value (OG).

Throughout this document, the analytical values are reported as well as the units of measure. Many parameters are not detectable in the treated water. Wherever the "less than sign" (<) is used it is followed by the method detection limit. This means that the parameter was not detected at or above the level indicated.

WATER QUALITY STANDARDS – BACTERIOLOGICAL QUALITY

According to its Permit to Operate a Waterworks the Buffalo Pound Water Treatment Plant is required to analyze one sample every week from the treated water for Bacteriological Quality. Coliforms were never detected in the treated water.

Parameter	Limit	Number of Samples Submitted	Number of Samples Exceeding Limit
Total Coliforms	0 per 100 ml	52	0
Background Organisms	<200 per 100 ml	52	0

WATER QUALITY STANDARDS – FILTER TURBIDITY

The Buffalo Pound Water Treatment Plant is required to monitor the effluent turbidity from all twelve filters on a continuous basis. The turbidity from each individual filter shall be less than 0.3 NTU, 95% of the time. The turbidity shall not exceed 0.3 NTU for more than 12 consecutive hours and shall never exceed 1.0 NTU. If, on those occasions when the monthly average of the source water turbidity is less than 1.5 NTU, the water turbidity levels from each filter must be less than 0.2 NTU, 95% of the time, the turbidity shall not exceed 0.2 NTU for more than 12 consecutive hours and shall never exceed 1.0 NTU.

The Plant's SCADA Control System automatically generates an alarm if a filter effluent turbidity exceeds 0.3 NTU. If the turbidity exceeds 0.4 NTU at any time, the Plant's SCADA Control System automatically closes the filter effluent valve, turning off the filter. The Plant's operating permit requires on-line turbidity monitoring on the effluent of each of its twelve filters. A problem with the turbidity monitor or data transfer system to the Plant's SCADA requires a shutdown of the affected filter. To address this possibility the Plant has a second independent turbidimeter on each filter so that continuous monitoring can be maintained even if the first turbidimeter fails.

WATER QUALITY STANDARDS – FLUORIDE

The Buffalo Pound Water Treatment Plant adds fluoride to the water pumped to the City of Moose Jaw and is required to monitor the fluoride level in that water on a continuous basis. The Maximum Acceptable Concentration (MAC) is 1.5 mg/l. Alarms signal a high residual dose at 1.3 mg/L. A breakdown to the fluoride addition system early in the year required the termination of fluoride addition from February through October when repairs could be carried out. Repairs required a Plant outage and so needed to be done when water demands were low. The maximum recorded level of fluoride via a laboratory analysis for water pumped to Moose Jaw was 0.82 mg/L. Fluoride in the water destined for Moose Jaw averaged 0.60 mg/L during the period when fluoride addition was carried out.

WATER QUALITY STANDARDS – CHLORINE RESIDUAL

To ensure adequate disinfection, the Buffalo Pound Water Treatment Plant must monitor the chlorine residual of the treated water on a continuous basis. The free chlorine residual shall not be less than 0.1 milligrams per litre. The normal operating range for the free chlorine residual in the treated water is 0.9 to 1.1 mg/l. The SCADA control system will automatically shut off pumping to the Cities if the chlorine level is less than 0.5 mg/l. A high level chlorine alarm will alert the operator if chlorine levels in the clearwell exceed 1.3 mg/L.

WATER QUALITY STANDARDS – CHEMICAL – GENERAL

As part of the Plant's "Permit to Operate" a general chemical analysis is required once in every three month period from the treated water. Only two of these parameters have an established Maximum Acceptable Concentration (MAC). Eight others have an Aesthetic Objective (AO) which is desirable but has no impact on human health.

Parameter (mg/l) unless stated	Feb. 13	May 14	Aug. 12	Nov. 12	MAC	No. of Samples Exceeding MAC or AO
Nitrate	<0.04	1.34	0.32	0.26	45	0
Fluoride	0.10	0.06	0.10	0.10	1.5	0
					AO	
Alkalinity	140	56	90	118	500	0
Chloride	26.36	16.93	24.24	21.93	250	0
Hardness	256	144	169	209	800	0
Magnesium	29.2	15.4	21.2	24.2	200	0
pH (pH units)	6.93	6.54	7.13	7.18	6.5 – 9.0	0
Sodium	77.5	39.6	59.5	62.6	300	0
Sulphate	257.2	164.9	190	210	500	0
Total Dissolved Solids	522	306	408	426	1500	0
Carbonate	ND	ND	ND	ND		
Calcium	54.8	35.2	34.4	43.0		
Conductivity (uS/cm)	826	498	615	682		
Bicarbonate	171	68	110	144		

ND – Not Detected

WATER QUALITY STANDARDS – CHEMICAL – HEALTH

The Buffalo Pound Water Treatment Plant is required to sample the treated water for the following parameters once in every six month period. Eight of these parameters have an established MAC. Five parameters have guideline values which establish a target that could be expected from well functioning water treatment plants or are aesthetic objectives for the taste or appearance of treated water.

Parameter (mg/l)	May 21	Nov. 19	MAC	Number of Samples Exceeding Limit
Arsenic	0.0006	0.0008	0.010	0
Barium	0.062	0.060	1.0	0
Boron	0.04	0.07	5.0	0
Cadmium	0.00001	<0.00001	0.005	0
Chromium	<0.0005	<0.0005	0.05	0
Lead	<0.0001	<0.0001	0.01	0
Selenium	0.0005	0.0003	0.01	0

Uranium	0.0002	<0.0001	0.02	0
			Guideline	
Aluminum	0.0071	0.014	0.1	0
Copper	<0.0002	<0.0002	1.0	0
Iron	0.0013	0.0010	0.3	0
Manganese	0.0014	<0.0005	0.05	0
Zinc	<0.0005	<0.0005	5.0	0

WATER QUALITY STANDARDS – PESTICIDES

Once per year the Buffalo Pound Water Treatment Plant is required to have the treated water analyzed for the following pesticides. Those noted on the permit are indicated below; the entire pesticide analysis with an additional 53 analytes not presently regulated components is available in the Appendix. Fourteen of the parameters listed below have an established MAC. Three parameters have no MAC but are required by our regulatory permits to be monitored.

Parameter (mg/l)	July 8	MAC	Number of Samples Exceeding Limit
Atrazine	<0.000005	0.005	0
Bromoxynil	<0.000005	0.005	0
Carbofuran	<0.002	0.09	0
Chlorpyrifos	<0.000005	0.09	0
Dicamba	<0.000005	0.12	0
Dichlorprop 2-4DP	<0.000005	N/A	0
Diclofop-methyl	<0.00002	0.009	0
Dimethoate	<0.00005	0.02	0
Ethalfluralin	<0.000005	N/A	0
Glyphosate	<0.0001	0.28	0
Malathion	<0.00005	0.19	0
MCPA	<0.000005	0.10	0
Pentachlorophenol	<0.0001	0.06	0
Picloram	<0.000005	0.19	0
Triallate	<0.000005	N/A	0
Dichlorophenoxyacetic Acid 2,4 (2,4-D)	<0.000005	0.1	0
Trifluralin	<0.000005	0.045	0

WATER QUALITY STANDARDS – DISINFECTION BY-PRODUCT – TRIHALOMETHANES

As part of the Plant's "Permit to Operate" an analysis for Trihalomethanes is required once per month from the treated water. The MAC is 0.1 milligrams per litre, or, 100 micrograms per litre (parts per billion) for total trihalomethanes on an annual average. The annual average of 46 micrograms per litre is well below the MAC.

Parameter (ug/l)	Jan. 14	Feb. 4	Mar. 5	Apr. 2	May 13	Jun. 10
Chloroform	20	23	26	29	62	2
Bromodichloromethane	10	11	11	12	7	<1
Dibromochloromethane	4	4	3	4	<1	<1
Bromoform	<1	<1	<1	<1	<1	<1
Total Trihalomethanes	34	38	40	44	69	2
	Jul. 2	Aug. 6	Sep. 3	Oct. 7	Nov. 5	Dec. 2
Chloroform	36	66	55	35	25	24
Bromodichloromethane	1	10	18	16	12	14
Dibromochloromethane	<1	<1	2	3	2	3
Bromoform	<1	<1	<1	<1	<1	<1
Total Trihalomethanes	37	76	75	53	39	41

WATER QUALITY STANDARDS – DISINFECTION BY-PRODUCT – HALOACETIC ACIDS (HAA5S)

The Buffalo Pound Water Treatment Plant is obligated to sample for Haloacetic Acids every three months. The annual average of quarterly samples (20 ug/L) was well below the MAC. The results are as follows:

Parameter (ug/l)	Jan. 21	Apr. 8	Jul. 10	Oct. 7	Annual Average	MAC	Number of Samples Exceeding Limit
HAA5	33	40	<5	5	20	80	0

WATER QUALITY STANDARDS – CYANIDE AND MERCURY

The Buffalo Pound Water Treatment Plant is required to submit two (2) samples per year for analysis for Cyanide and Mercury.

Parameter (mg/l)	May 21	Nov. 19	MAC	Number of Samples Exceeding Limit
Cyanide	<0.001	<0.001	0.2	0
Mercury	<0.00001	<0.00001	0.001	0

WATER QUALITY STANDARDS – ORGANICS PLUS MICROCYSTIN

The Buffalo Pound Water Treatment Plant is required to submit one (1) sample per year for analysis for various organics including Microcystin. Those noted on the permit are indicated below; the entire organic analysis for many additional compounds is available in the Appendix.

Parameter (mg/l)	Jul. 8	MAC	Number of Samples Exceeding Limit
Benzene	<0.0001	0.005	0
Benzo(a)pyrene	<0.00001	0.00001	0
Carbon Tetrachloride	<0.0001	0.005	0
Dichlorobenzene 1,2	<0.0001	0.2	0
Dichlorobenzene 1,4	<0.0001	0.005	0
Dichoroethane 1,2	<0.0001	0.005	0
Dichloroethylene 1,1	<0.0001	0.014	0
Dichloromethane	<0.002	0.05	0
Dichlorophenol 2,4	<0.0001	0.9	0
Ethylbenzene	<0.0001	0.0024	0
Monochlorobenzene	<0.0001	0.08	0
Toluene	<0.0001	0.024	0
Tetrachlorophenol 2,3,4,6	<0.0001	0.1	0
Trichloroethylene	<0.0001	0.05	0
Trichlorophenol 2,4,6	<0.0001	0.005	0
Vinyl Chloride	<0.0005	0.002	0
Xylenes	<0.0001	0.300	0
Microcystin	<0.0005 (Jul. 10)	0.0015	0

2013 - BUFFALO POUND WATER QUALITY DATA
RAW LAKE WATER

PAGE 1

Parameters	Units	JAN Avg	FEB Avg	MAR Avg	APR Avg	MAY Avg	JUN Avg	JUL Avg	AUG Avg	SEP Avg	OCT Avg	NOV Avg	DEC Avg	YEAR AVG	YEAR MIN	YEAR MAX
PHYSICAL																
Colour (Apparent)	Pt/Co	20	20	15	18	130	40	53	45	60	28	25	25	43	15	200
Conductivity	µS/cm	787	796	779	774	512	575	587	586	589	639	665	719	650	470	796
Bench Diss. Oxygen	mg/L	10.0	10.2	7.7	5.3	9.1	7.7	8.4	7.8	8.4	11.1	11.5	12.7	9.0	4.9	13.6
Bench Diss. Oxygen	%	74.7	74.2	57.4	38.9	79.8	82.2	97.3	87.3	92.4	89.6	84.5	96.0	78.7	35.8	100.7
ON-LINE Diss. Oxygen	%	77.0	78.5	55.8	50.4	91.8	97.5	87.0	93.7	102.5	102.0	100.0	89.1	84.9	46.0	110.0
Odour	T.O.N.	31	22	18	16	51	137	168	162	217	94	89	64	90	14	300
pH	pH units	7.91	7.83	7.71	7.61	7.97	8.40	8.63	8.57	8.81	8.58	8.44	8.27	8.23	7.53	8.94
Temperature	° C	2.6	2.3	3.1	3.0	9.0	17.8	21.3	21.3	18.5	7.3	2.5	3.2	9.5	1.1	22.7
Turbidity	NTU	0.9	0.9	1.0	0.9	36.3	4.2	9.3	6.3	8.5	3.8	9.1	2.5	6.9	0.8	77.0
TDS	mg/L	498	492	520	508	336	372	341	382	352	419	440	448	416	300	520
TDS	mg/L(calc)	622	639	644	632	400	459	473	456	447	498	537	570	520	367	644
Langelier Index (RTW)	pH units (calc)	0.20	0.13	0.05	-0.10	0.20	0.80	0.97	0.97	1.10	0.79	0.22	0.12	0.48	-0.28	1.10
MAJOR CONSTITUENTS																
Alkalinity(p)	mg/L CaCO3	<DL	<DL	<DL	<DL	1	2	6	6	11	4	3	<DL	3	<DL	12
Alkalinity(total)	mg/L CaCO3	186	206	208	212	130	156	145	134	137	154	170	187	168	114	216
Bicarbonate	mg/L	227	251	254	259	155	185	162	147	140	179	201	227	197	134	263
Carbonate	mg/L	<DL	<DL	<DL	<DL	2	3	7	8	13	4	3	<DL	4	<DL	14
Calcium	mg/L	49	56	57	57	39	44	40	35	33	40	44	48	44	32	58
Magnesium	mg/L	28	29	30	29	17	21	11	22	22	23	25	27	23	0	30
Hardness (total)	mg/L CaCO3	232	261	262	260	164	191	186	170	175	197	213	227	205	145	262
Sodium	mg/L	79	76	75	71	44	51	57	61	65	64	66	68	63	40	79
Potassium	mg/L	7.0	6.4	6.2	6.0	7.1	6.6	6.3	6.2	6.2	6.2	6.2	6.6	6.4	6.0	7.7
Sulphate	mg/L	212	196	196	183	120	133	147	156	156	158	169	176	161	112	212
Chloride	mg/L	24.2	21.9	21.1	20.5	11.6	14.0	15.6	17.2	17.8	17.7	18.6	19.7	17.6	10.1	24.2
TRACE CONSTITUENTS																
Aluminum (dissolved 0.45µ)	ugL		<DL	6	<DL	74	67	104	20	<DL	17	69	52	37	<DL	104
Ammonia N	mg/L N	0.19	0.29	0.27	0.19	0.13	0.11	0.08	0.23	0.10	<DL	0.15		0.15	<DL	0.32
BOD (5-day)	mg/L	2.7	2.7	3.4	3.0	2.8	2.2	3.6	4.4	4.7	4.8	5.1	3.4	3.6	2.0	5.6
Bromide	mg/L	0.11	<DL	<DL	<DL	<DL	0.07	0.08	0.09	0.08	0.07	0.06	<DL	0.06	<DL	0.11
Chlorophyll a	µg/L	8	6	4	7	20	17	70	54	72	20	22	25	28	4	107
Fluoride	mg/L	0.20	0.20	0.20	0.20	0.14	0.16	0.16	0.16	0.18	0.19	0.19	0.20	0.18	0.13	0.20
Iron (dissolved)	mg/L	<DL	<DL	<DL	<DL	0.03	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	0.06
Manganese (dissolved)	mg/L	0.04	0.03	0.16	0.27	0.04	0.01	<DL	<DL	<DL	<DL	<DL	0.03	0.05	<DL	0.29
Nitrate	mg/L	<DL	<DL	0.15	0.21	0.19	0.08	0.06	<DL	<DL	0.07	0.07	0.11	0.09	<DL	0.31
Organic N	mg/L N	<DL	0.52	0.51	0.55	0.74	0.60	1.09	0.84	0.99	0.76	0.79	0.75	0.74	0.51	1.31
Raw TOC	mg/L C (UV)	7.0	6.3	6.1	6.2	8.4	6.9	8.2	7.9	8.0	7.1	7.3	6.9	7.2	6.0	10.3
Raw DOC (GF diss)	mg/L C (UV)	6.8	6.2	6.1	6.1	6.9	6.0	6.2	6.5	6.5	6.3	6.1	6.5	6.3	5.6	8.3
UV absorbance @ 254nm	Abs 10cm	1.074	1.088	1.103	1.100	1.653	1.154	1.062	1.078	1.078	0.989	0.954	1.048	1.112	0.929	2.042
SUVA	L / mg m	1.589	1.770	1.808	1.807	2.402	1.932	1.694	1.673	1.673	1.571	1.572	1.607	1.754	1.492	2.583
PreFM UV abs @ 254nm	Abs 10cm	0.910	0.923	0.952	0.965	1.287	0.909	0.828	0.866	0.863	0.818	0.811	0.885	0.916	0.784	1.543
Phosphate(ortho)	µg/L P	18	18	27	32	<DL	8	<DL	6	2	2	3	<DL	9	<DL	37
Phosphate(total)	µg/L P	41	39	45	53	147	68	71	95	93	57	58	53	73	39	214
Silica (SiO3)	mg/L	5.1	5.0	5.3	5.7	4.8	2.3	3.1	5.2	4.8	5.5	4.9	5.5	4.7	2.2	6.7
Sulphide	µg/L															

Continued...

2013 - BUFFALO POUND WATER QUALITY DATA
RAW LAKE WATER

PAGE 2

Parameters	Units	JAN Avg	FEB Avg	MAR Avg	APR Avg	MAY Avg	JUN Avg	JUL Avg	AUG Avg	SEP Avg	OCT Avg	NOV Avg	DEC Avg	YEAR AVG	YEAR MIN	YEAR MAX
TRACE CONSTITUENTS																
PreFM																
TTHM's (total)	µg/L(calc)	34	34	34	37	82	69	74	73	69	42	32	36	51	30	103
Chloroform	µg/L	20	23	23	25	71	52	52	49	44	26	20	22	36	18	91
Bromodichloromethane	µg/L	10	9	8	9	10	15	17	19	19	12	9	11	12	5	20
Chlorodibromomethane	µg/L	4	3	3	3	1	3	5	5	5	4	3	4	3	<DL	5
Bromoform	µg/L	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	1
BIOLOGICAL																
Blue Green Algae (x10^-3)	per litre	<DL	<DL	<DL	<DL	22	225	2902	2439	4083	700	103	18	1018	<DL	5044
Green Algae (x10^-3)	per litre	461	197	100	640	7472	3942	2978	3189	2667	1581	1081	772	2102	33	12222
Diatoms (x10^-3)	per litre	<DL	33	<DL	<DL	17	161	244	345	167	86	175	83	117	<DL	444
Flagellates (x10^-3)	per litre	26	17	<DL	29	1733	981	1236	928	872	375	292	517	607	<DL	3889
Crustaceans	per litre	6	15	9	18	12	44	61	17	44	26	59	130	38	<3	190
Nematodes (x10^-3)	per litre	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	41
Rotifers (x10^-3)	per litre	<DL	<DL	<DL	<DL	<DL	<DL	<DL	17	<DL	<DL	<DL	<DL	<DL	<DL	44
Other (x10^-3)	per litre	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Total Green & B-G	per litre	461	197	100	640	7495	4167	5880	5628	6750	2280	1184	786	229	56	11111
BACTERIOLOGICAL																
Total Coliforms	per 100 ml	<DL	<DL	1	1	50	13	2860	7250	3750	785	43	<DL	1310	<DL	19000
Total Coliforms (background)	per 100 ml	226	471	187	121	830	1950	29240	44400	64250	3995	2418	92	12837	24	81000
Faecal Coliforms	per 100 ml	<DL	<DL	<DL	1	1	1	5	2	22	2	2	<DL	3	<DL	50
Standard Plate Count	per 1 ml	7	23	11	7	1235	260	820	1203	1080	182	173	22	411	4	2830
CHEMICAL DOSES																
Alum	mg/L	139	123	114	112	93	75	82	81	85	79	88	90	96	72	150
Alum\Raw DOC	ratio	20.48	19.92	18.73	18.36	13.48	12.57	13.06	12.63	13.19	12.62	14.51	13.71	15.25	11.36	21.43
Alum-DOC Stoich	ratio	1.66	1.62	1.52	1.49	1.09	1.02	1.06	1.02	1.07	1.02	1.18	1.11	1.24	0.92	1.74
Chlorine-pre	mg/L	4.4	4.4	4.2	4.1	6.1	3.9	5.9	6.0	5.6	3.0	2.6	3.6	4.5	2.2	8.5
Chlorine-intermed	mg/L															
Chlorine-post	mg/L	1.1	1.0	0.6	0.6	1.0	1.4	1.6	1.6	1.4	1.4	1.5	1.1	1.2	0.6	1.9
Plant Flow	MLD	82.5	98.0	95.0	90.6	121.3	117.0	120.4	128.5	125.3	98.8	100.5	85.8	105.1	69.0	168.0
Qu'Appelle Dam Flow	cu m/s	2.1	1.0	1.0	0.9	1.2	5.3	3.8	3.2	1.2	2.9	1.7	1.7	2.2	0.0	9.5
Fluoride (Set Point for MJ)	mg/L	0.65	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.65	0.65	0.17	0.00	0.65
Powdered Carbon	mg/L															
CPAC Train A	mg/L											28.0	30.0	29.0	28.0	30.0
CPAC Train B	mg/L											28.0	30.0	29.0	28.0	30.0
Total Chlorine dose	mg/L (Calc)	5.5	5.4	4.8	4.7	7.1	5.3	7.5	7.6	7.0	4.5	4.1	4.7	5.7	3.6	9.8
Date GACs ON														15-May		
Date GACs OFF														10-Jan		
Date Ice ON Lake														06-Nov		
Date Ice OFF Lake														13-May		
Date PAC ON																
Date PAC OFF																
Chlorine Residuals Exit Plant (week avg.)																
Free Chlorine	mg/L	1.10	1.08	1.12	1.11	1.11	1.06	1.12	1.12	1.09	1.09	1.10	1.11	1.10	1.03	1.18
Combined Chlorine	mg/L	0.33	0.33	0.34	0.34	0.20	0.10	0.18	0.19	0.19	0.22	0.25	0.35	0.25	0.06	0.42

2013 - BUFFALO POUND WATER QUALITY DATA
TREATED WATER
PAGE 3

Parameters	Units	JAN Avg	FEB Avg	MAR Avg	APR Avg	MAY Avg	JUN Avg	JUL Avg	AUG Avg	SEP Avg	OCT Avg	NOV Avg	DEC Avg	YEAR AVG	YEAR MIN	YEAR MAX
PHYSICAL																
Colour (Apparent)	Pt/Co	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Conductivity	µS/cm	811	826	805	805	498	575	621	615	621	654	682	735	687	498	826
Diss. Oxygen	mg/L	13.4	12.6	12.4	11.9	11.5	8.6	7.8	9.1	8.1	11.5	13.9	12.5	11.1	7.8	13.9
% Sat. Diss. Oxygen	%	94.9	91.0	90.3	88.2	92.1	89.6	91.1	100.4	90.2	99.8	102.7	92.4	93.6	88.2	102.7
Odour(Dechlorinated)	T.O.N.	6	7	6	5	5	<1	1	1	2	4	5	8	4	<1	11
PreGAC Odour	T.O.N.	11				13	16	71	69	59	19	21	17	38	11	92
Odour Removal by Coagulation and Filtration	%	78.2%	66.6%	63.7%	64.9%	77.9%	87.2%	53.0%	57.5%	72.8%	80.9%	77.1%	80.2%	71.0%	24.8%	90.7%
Odour Removal Overall	%	78.2%	66.6%	63.7%	64.9%	90.2%	99.6%	99.5%	99.4%	99.3%	95.4%	94.6%	87.9%	87.1%	50.0%	100.0%
PreFM pH	pH units	7.58	7.57	7.48	7.46	7.53	8.01	8.04	8.18	8.50	8.29	8.20	7.94	7.90	7.20	8.64
Coagulation pH - Channel 1	pH units	6.62	6.73	6.79	6.78	6.64	6.95	6.88	6.80	6.87	7.01	6.98	7.09	6.85	6.33	7.46
Coagulation pH - Channel 2	pH units	6.66	6.77	6.83	6.83	6.69	6.97	6.89	6.83	6.90	6.98	6.98	7.10	6.87	6.40	7.48
Clearwell pH	pH units	6.85	6.89	6.98	6.97	6.86	7.19	7.15	7.10	7.13	7.20	7.18	7.21	7.06	6.54	7.30
Temperature	°C	2.0	2.3	2.8	2.8	9.1	17.8	21.7	21.3	19.1	7.9	2.9	3.1	9.6	1.3	23.1
Turbidity	NTU	0.07	0.07	0.08	0.08	0.07	0.08	0.08	0.09	0.09	0.08	0.07	0.08	0.08	0.06	0.10
Total Dissolved Solids	mg/L	516	522	546	530	306	376	400	408	370	440	426	470	443	306	546
Total Dissolved Solids	mg/L(calc)	607	627	631	620	354	443	467	450	448	491	517	552	517	354	631
Turbidity Log Removal	(calc)	1.14	1.07	1.07	1.05	2.49	1.71	1.96	1.81	1.93	1.65	1.99	1.48	1.62	0.96	2.98
Langelier Index (RTW)	pH units (calc)	-1.23	-0.95	-0.86	-0.85	-1.81	-0.72	-0.57	-0.83	-0.96	-0.81	-0.98	-1.20	-0.98	-1.81	-0.57
MAJOR CONSTITUENTS																
Alkalinity(p)	mg/L CaCO3	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Alkalinity(total)	mg/L CaCO3	117	142	146	154	79	113	98	88	89	111	121	136	116	56	157
Bicarbonate	mg/L	142	174	179	187	96	138	119	107	109	135	147	166	142	68	191
Carbonate	mg/L	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Calcium	mg/L	48	55	57	58	35	42	41	34	31	38	43	47	44	31	58
Magnesium	mg/L	28	29	30	29	15	20	22	21	22	24	24	26	24	15	30
Hardness (total)	mg/L CaCO3	233	256	265	263	144	186	189	169	167	190	209	227	208	144	265
Sodium	mg/L	79	78	76	71	40	49	56	60	62	62	63	68	64	40	79
Potassium	mg/L	7.0	6.5	6.2	6.2	7.6	6.8	6.3	6.3	6.3	6.2	6.2	6.6	6.5	6.2	7.6
Sulphate	mg/L	281	257	253	239	165	170	188	190	197	202	210	218	214	165	281
Chloride	mg/L	28.5	26.4	26.4	24.9	16.9	18.2	21.1	24.2	25.5	22.4	21.9	23.3	23.3	16.9	28.5
TRACE CONSTITUENTS																
CLEAR WELL																
Aluminum (dissolved 0.45µ)	µg/L Chart		55	46	31	24	9	16	14	<DL	8	13	19	21	<DL	55
Aluminum (total)	µg/L Chart		84	68	63	27	8	16	14	11	11	23	20	31	8	84
Aluminum (total 12 mo avg)	µg/L		49	47	50	50	49	48	48	48	47	37	31			
Aluminum (particulate)	µg/L (Calc)		29	22	32	<DL	<DL	<DL	<DL	11	<DL	10	<DL	10	<DL	32
Mixed Media Filter A																
Aluminum (total)	µg/L		71	70	61	26	43	39	44	55	46	83	80	60	26	90
Mixed Media Filter L																
Aluminum (total)	µg/L		68	59	56	28	24	48	40	65	39	81	58	54	24	96
PREGAC																
Aluminum (dissolved)	µg/L							27	33	38	31	42	36	35	27	42
Aluminum (total)	µg/L Chart							38	38	55	40	77	64	56	38	84
Ammonia N	mg/L N	<DL	<DL	<DL	<DL	0.04	0.09	<DL	<DL	<DL	<DL		<DL	<DL	<DL	0.09
Bromide	mg/L	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Fluoride	mg/L	0.10	0.10	0.09	0.10	0.06	0.10	0.09	0.10	0.10	0.10	0.10	0.10	0.10	0.06	0.10
Fluoride (MJ dose by ISE)	mg/L (wk avg)	0.49	0.19	0.10	0.10	0.08	0.10	0.09	0.09	0.10	0.10	0.71	0.65	0.23	0.06	0.82
Iron (dissolved)	mg/L	<DL	<DL	<DL		<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Iron (total)	mg/L	<DL	<DL	<DL		0.02	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	0.02
Manganese (dissolved)	mg/L	0.01	<DL	<DL		<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	0.01
Manganese (total)	mg/L	0.01	<DL	<DL		<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	0.01
Nitrate	mg/L N	<DL	<DL	<DL	0.13	0.30	<DL	0.07	0.07	0.08	<DL	0.06	0.06	0.07	<DL	0.30
Organic N	mg/L N	0.32	0.29	0.28	0.30	0.28	0.08	0.11	0.17	0.20	0.20	0.21	0.29	0.23	0.08	0.32
CW TOC	mg/L C	3.8	4.0	3.9	4.0	2.3	0.9	1.7	2.4	2.8	3.1	3.2	4.1	3.0	0.4	4.6
CW DOC (GF diss)	mg/L C	3.8	4.0	4.0	4.0	2.4	0.9	1.7	2.4	2.8	3.0	3.2	4.1	3.0	0.5	4.7
PreGAC DOC (GF diss)	mg/L C	4.0				3.7	3.8	3.9	4.1	4.1	4.0	4.0	4.5	4.0	3.6	4.7
DOC Removal by Coagulation & Filtration	% Removal	41.6%	35.3%	34.8%	34.0%	42.2%	37.1%	36.6%	36.7%	36.8%	36.0%	34.6%	32.9%	36.5%	26.6%	45.6%
DOC Removal by GAC Filtration	% Removal	15.0%				86.5%	76.0%	56.0%	40.5%	31.8%	26.1%	19.0%	12.2%	41.4%	11.6%	86.8%
Total DOC (% Removal)	% Removal	43.8%	35.3%	34.8%	34.0%	68.2%	84.8%	72.2%	62.3%	57.0%	52.7%	47.0%	37.1%	52.4%	32.8%	92.1%
CW Organic Carbon (diss @ 254nm)	Abs 10cm	0.452	0.518	0.519	0.529	0.314	0.035	0.098	0.185	0.225	0.258	0.304	0.478	0.324	0.015	0.679
PreGAC Organic Carbon (diss @ 254nm)	Abs 10cm	0.473				0.542	0.500	0.475	0.488	0.495	0.504	0.503	0.575	0.501	0.452	0.601
Conventional SUVA	L / mg m	1.233	1.303	1.305	1.317	1.462	1.333	1.206	1.184	1.216	1.252	1.266	1.289	1.280	1.129	1.522
CW SUVA	L / mg m	1.184	1.303	1.305	1.317	0.887	0.389	0.554	0.724	0.813	0.868	0.943	1.160	0.952	0.209	1.478
Phosphate(ortho)	µg/L P	3	4	4	<DL		6	4	<DL	<DL	<DL	<DL	<DL	2	<DL	6
Phosphate(total)	µg/L P	8	8	5	8	5	8	6	7	3	4	5	7	6	3	8
Silica (SiO3)	mg/L	4.7	4.7	4.7	5.2	6.0	2.4	2.9	4.4	4.5	5.4	4.8	5.0	4.5	2.4	6.0
Sulphide	µg/L															

Continued...

2013 - BUFFALO POUND WATER QUALITY DATA
TREATED WATER

PAGE 4

Parameters	Units	JAN Avg	FEB Avg	MAR Avg	APR Avg	MAY Avg	JUN Avg	JUL Avg	AUG Avg	SEP Avg	OCT Avg	NOV Avg	DEC Avg	YEAR AVG	YEAR MIN	YEAR MAX
TRACE CONSTITUENTS																
CLEARWELL																
TTHM's (total)	µg/L(calc)	36	40	42	44	82	7	58	76	68	48	40	43	48	2	95
Chloroform	µg/L	21	25	27	28	36	5	54	63	48	31	24	25	33	<DL	80
Bromodichloromethane	µg/L	11	12	12	12	5	<DL	4	13	18	15	13	14	11	<DL	18
Chlorodibromomethane	µg/L	4	4	4	4	<DL	<DL	<DL	1	3	3	3	4	2	<DL	5
Bromoform	µg/L	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
CHANNEL																
TTHM's (total)	µg/L(calc)	31	36	37	38	75	74	70	75	75	48	33	32	52	31	75
Chloroform	µg/L	18	23	24	25	68	55	46	50	48	28	20	18	35	18	68
Bromodichloromethane	µg/L	9	10	10	10	7	16	19	20	21	15	10	10	13	7	21
Chlorodibromomethane	µg/L	4	3	3	3	<DL	3	5	5	6	5	3	4	4	<DL	6
Bromoform	µg/L	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
PreGAC																
TTHM's (total)	µg/L(calc)	31				72	68	70	68	62	44	35	36	56	31	77
Chloroform	µg/L	17				58	49	47	45	39	26	21	21	37	17	64
Bromodichloromethane	µg/L	9				13	16	18	19	18	13	10	11	15	9	20
Chlorodibromomethane	µg/L	4				2	3	5	5	5	5	3	4	4	1	5
Bromoform	µg/L	1				<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	1
BIOLOGICAL																
Blue Green Algae	per litre	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Green Algae	per litre	11111	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	926	<DL	11111
Diatoms	per litre	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Flagellates	per litre	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Crustaceans	per litre	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Nematodes	per litre	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Rotifers	per litre	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Other	per litre	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
BACTERIOLOGICAL																
Total Coliforms	per 100 ml	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
* Total Coliforms (background	per 100 ml	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Faecal Coliforms	per 100 ml															
Standard Plate Count	per 1 mL	<DL	<DL	<DL	<DL	<DL	<DL	13.8	7.0	7.0	1.8	<DL	<DL	2.9	<DL	24.0

*Note: Faecal Coliforms analyzed ONLY if Total Coliforms Detected.

SRC Group # 2013-702

SRC ANALYTICAL

Jan 29, 2013

422 Downey Road
Saskatoon, Saskatchewan, Canada
S7N 4N1
(306) 933-6932 or 1-800-240-8808

Buffalo Pound Water Admin. Board
2476 Victoria Avenue
Box 1790
Regina, SK S4P 3C8
Attn: Dan Conrad

Date Samples Received: Jan-22-2013 Client P.O.: 17174

2176 SK05JG0017 01/21/2013 07:45 BUFFALO POUND WATER TREATMENT PLANT - CLEARWELL
WATER

Analyte	Units	2176
Organic Chemistry		
Monochloroacetic acid	ug/L	<5
Monobromoacetic acid	ug/L	4.8
Dichloroacetic acid	ug/L	13
Trichloroacetic acid	ug/L	13
Dibromoacetic acid	ug/L	1.9
Halo Acetic Acids 5, Total (calc.)	ug/L	33
Bromochloroacetic acid	ug/L	6.0

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

SRC Group # 2013-3138

Apr 17, 2013

SRC ANALYTICAL

422 Downey Road
Saskatoon, Saskatchewan, Canada
S7N 4N1
(306) 933-6932 or 1-800-240-8808

Buffalo Pound Water Admin. Board
2476 Victoria Avenue
Box 1790
Regina, SK S4P 3C8
Attn: Dan Conrad

Sample #: **2013009030**
Date Sampled: **Apr 08, 2013**
Sample Matrix: **WATER**
Description: **SK05JG0017 04/08/2013 09:00 BUFFALO POUND WATER TREATMENT PLANT - CLEARWELL**

Client PO #: **17174**
Date Received: **Apr 09, 2013**

Analyte	Units	Result	DL
Organic Chemistry			
Monochloroacetic acid	ug/L	<5	5
Monobromoacetic acid	ug/L	3	1
Dichloroacetic acid	ug/L	16	0.5
Trichloroacetic acid	ug/L	19	1
Dibromoacetic acid	ug/L	2	0.5
Halo Acetic Acids 5, Total (calc.)	ug/L	40	5
Bromochloroacetic acid	ug/L	8	0.5

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

SRC Group # 2013-6821

Jul 16, 2013

SRC ANALYTICAL

422 Downey Road
Saskatoon, Saskatchewan, Canada
S7N 4N1
(306) 933-6932 or 1-800-240-8808

Buffalo Pound Water Admin. Board
2476 Victoria Avenue
Box 1790
Regina, SK S4P 3C8
Attn: Dan Conrad

Sample #: **2013020774**
Date Sampled: **Jul 10, 2013**
Sample Matrix: **WATER**
Description: **SK05JG0017 07/10/2013 08:25 BUFFALO POUND WATER TREATMENT PLANT - CLEARWELL**

Client PO #: **17174**
Date Received: **Jul 11, 2013**

Analyte	Units	Result	DL
Inorganic Chemistry			
Microcystin, Total	ug/L	<0.5	0.5
Organic Chemistry			
Monochloroacetic acid	ug/L	<5	5
Monobromoacetic acid	ug/L	<1	1
Dichloroacetic acid	ug/L	<0.5	0.5
Trichloroacetic acid	ug/L	1.4	1
Dibromoacetic acid	ug/L	1.7	0.5
Halo Acetic Acids 5, Total (calc.)	ug/L	<5	5
Bromochloroacetic acid	ug/L	1.3	0.5

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

SRC Group # 2013-6824

Jul 16, 2013

SRC ANALYTICAL

422 Downey Road
Saskatoon, Saskatchewan, Canada
S7N 4N1
(306) 933-6932 or 1-800-240-8808

Buffalo Pound Water Admin. Board
2476 Victoria Avenue
Box 1790
Regina, SK S4P 3C8
Attn: Dan Conrad

Sample #: **2013020772**
Date Sampled: **Jul 10, 2013**
Sample Matrix: **WATER**
Description: **07/10/2013 08:08 PREGAC**

Client PO #: **17174**
Date Received: **Jul 11, 2013**

Analyte	Units	Result	DL
Organic Chemistry			
Monochloroacetic acid	ug/L	<5	5
Monobromoacetic acid	ug/L	4.5	1
Dichloroacetic acid	ug/L	21	0.5
Trichloroacetic acid	ug/L	25	1
Dibromoacetic acid	ug/L	2.0	0.5
Halo Acetic Acids 5, Total (calc.)	ug/L	52.5	5
Bromochloroacetic acid	ug/L	5.6	0.5

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

SRC Group # 2013-6824

SRC ANALYTICAL

Jul 16, 2013

Buffalo Pound Water Admin. Board

Sample #: **2013020773**
Date Sampled: **Jul 10, 2013**
Sample Matrix: **WATER**
Description: **07/10/2013 07:15 RAW WATER**

Client PO #: **17174**
Date Received: **Jul 11, 2013**

Analyte	Units	Result	DL
Inorganic Chemistry			
Microcystin, Total	ug/L	0.5	0.5

SRC Group # 2013-5978

Jul 02, 2013

SRC ANALYTICAL

422 Downey Road
Saskatoon, Saskatchewan, Canada
S7N 4N1
(306) 933-6932 or 1-800-240-8808

Buffalo Pound Water Admin. Board
2476 Victoria Avenue
Box 1790
Regina, SK S4P 3C8
Attn: Dan Conrad

Sample #: **2013017971**
Date Sampled: **Jun 18, 2013**
Sample Matrix: **WATER**
Description: **SK05JG0017 06/18/2013 08:19 BPWTP CLEARWELL**

Client PO #: **17174**
Date Received: **Jun 20, 2013**

Analyte	Units	Result	DL
Organic Chemistry			
Carbaryl	ug/L	<0.1	0.1
Carbofuran	ug/L	<2	2

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

SRC Group # 2013-5979

Jul 02, 2013

SRC ANALYTICAL

422 Downey Road
Saskatoon, Saskatchewan, Canada
S7N 4N1
(306) 933-6932 or 1-800-240-8808

Buffalo Pound Water Admin. Board
2476 Victoria Avenue
Box 1790
Regina, SK S4P 3C8
Attn: Dan Conrad

Sample #: **2013017994**
Date Sampled: **Jun 18, 2013**
Sample Matrix: **WATER**
Description: **06/18/2013 07:18 BPWTP RAW WATER**

Client PO #: **17174**
Date Received: **Jun 20, 2013**

Analyte	Units	Result	DL
Organic Chemistry			
Carbaryl	ug/L	<0.1	0.1
Carbofuran	ug/L	<2	2

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

SRC Group # 2013-10235

SRC ANALYTICAL

Oct 15, 2013

422 Downey Road
Saskatoon, Saskatchewan, Canada
S7N 4N1
(306) 933-6932 or 1-800-240-8808

Buffalo Pound Water Admin. Board
2476 Victoria Avenue
Box 1790
Regina, SK S4P 3C8
Attn: Dan Conrad

Sample #: **2013032585**
Date Sampled: **Oct 07, 2013**
Sample Matrix: **WATER**
Description: **SK05JG0017 10/07/2013 08:21 BUFFALO POUND WATER TREATMENT PLANT - CLEARWELL**

Client PO #: **17174**
Date Received: **Oct 08, 2013**

Analyte	Units	Result	DL
Organic Chemistry			
Monochloroacetic acid	ug/L	<5	5
Monobromoacetic acid	ug/L	1.4	1
Dichloroacetic acid	ug/L	1.8	0.5
Trichloroacetic acid	ug/L	<1	1
Dibromoacetic acid	ug/L	2.1	0.5
Halo Acetic Acids 5, Total (calc.)	ug/L	5.3	5
Bromochloroacetic acid	ug/L	0.7	0.5

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

SRC Group # 2013-10263

SRC ANALYTICAL

Oct 15, 2013

422 Downey Road
Saskatoon, Saskatchewan, Canada
S7N 4N1
(306) 933-6932 or 1-800-240-8808

Buffalo Pound Water Admin. Board
2476 Victoria Avenue
Box 1790
Regina, SK S4P 3C8
Attn: Dan Conrad

Sample #: **2013032586**
Date Sampled: **Oct 07, 2013**
Sample Matrix: **WATER**
Description: **10/07/2013 08:35 PREGAC**

Client PO #: **17174**
Date Received: **Oct 08, 2013**

Analyte	Units	Result	DL
Organic Chemistry			
Monochloroacetic acid	ug/L	>5	5
Monobromoacetic acid	ug/L	3.6	1
Dichloroacetic acid	ug/L	18	0.5
Trichloroacetic acid	ug/L	14	1
Dibromoacetic acid	ug/L	2.4	0.5
Halo Acetic Acids 5, Total (calc.)	ug/L	38.0	5
Bromochloroacetic acid	ug/L	4.5	0.5

SRC Group # 2013-4787

SRC ANALYTICAL

May 28, 2013

422 Downey Road
Saskatoon, Saskatchewan, Canada
S7N 4N1
(306) 933-6932 or 1-800-240-8808

Buffalo Pound Water Admin. Board
2476 Victoria Avenue
Box 1790
Regina, SK S4P 3C8
Attn: Dan Conrad

Sample #: **2013014445**
Date Sampled: **May 21, 2013**
Sample Matrix: **WATER**
Description: **SK05JG0017 05/21/2013 07:55 BUFFALO POUND WATER TREATMENT PLANT - CLEARWELL**

Client PO #: **17174**
Date Received: **May 22, 2013**

Analyte	Units	Result	DL
Inorganic Chemistry			
Total Cyanide (S.A.D.)	ug/L	<1	1
ICP			
Aluminum	mg/L	0.0071	0.0005
Arsenic	ug/L	0.6	0.1
Barium	mg/L	0.062	0.0005
Boron	mg/L	0.04	0.01
Cadmium	mg/L	0.00001	0.00001
Chromium	mg/L	<0.0005	0.0005
Copper	mg/L	<0.0002	0.0002
Iron	mg/L	0.0013	0.0005
Lead	mg/L	<0.0001	0.0001
Manganese	mg/L	0.0014	0.0005
Mercury	ug/L	<0.01	0.01
Selenium	mg/L	0.0005	0.0001
Uranium	ug/L	0.2	0.1
Zinc	mg/L	<0.0005	0.0005

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

SRC Group # 2013-4827

SRC ANALYTICAL

May 27, 2013

422 Downey Road
Saskatoon, Saskatchewan, Canada
S7N 4N1
(306) 933-6932 or 1-800-240-8808

Buffalo Pound Water Admin. Board
2476 Victoria Avenue
Box 1790
Regina, SK S4P 3C8
Attn: Dan Conrad

Sample #: **2013014444**
Date Sampled: **May 21, 2013**
Sample Matrix: **WATER**
Description: **05/21/2013 07:15 RAW WATER**

Client PO #: **17174**
Date Received: **May 22, 2013**

Analyte	Units	Result	DL
Inorganic Chemistry			
Total Cyanide (S.A.D.)	ug/L	<1	1
ICP			
Aluminum	mg/L	0.16	0.0005
Arsenic	ug/L	2.4	0.1
Barium	mg/L	0.056	0.0005
Boron	mg/L	0.04	0.01
Cadmium	mg/L	0.00004	0.00001
Chromium	mg/L	<0.0005	0.0005
Copper	mg/L	0.0010	0.0002
Iron	mg/L	0.15	0.0005
Lead	mg/L	0.0002	0.0001
Manganese	mg/L	0.067	0.0005
Mercury	ug/L	<0.01	0.01
Selenium	mg/L	0.0004	0.0001
Uranium	ug/L	1.1	0.1
Zinc	mg/L	0.031	0.0005

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

SRC Group # 2013-11868

SRC ANALYTICAL

Nov 25, 2013

422 Downey Road
Saskatoon, Saskatchewan, Canada
S7N 4N1
(306) 933-6932 or 1-800-240-8808

Buffalo Pound Water Admin. Board
2476 Victoria Avenue
Box 1790
Regina, SK S4P 3C8
Attn: Dan Conrad

Sample #: **2013038541**
Date Sampled: **Nov 19, 2013**
Sample Matrix: **WATER**
Description: **SK05JG0017 11/19/2013 08:43 BUFFALO POUND WATER TREATMENT PLANT - CLEARWELL**

Client PO #: **17174**
Date Received: **Nov 20, 2013**

Analyte	Units	Result	DL
Inorganic Chemistry			
Total Cyanide (S.A.D.)	ug/L	<1	1
ICP			
Aluminum	mg/L	0.014	0.0005
Antimony	mg/L	0.0002	0.0002
Arsenic	ug/L	0.8	0.1
Barium	mg/L	0.060	0.0005
Beryllium	mg/L	<0.0001	0.0001
Boron	mg/L	0.07	0.01
Cadmium	mg/L	<0.00001	0.00001
Chromium	mg/L	<0.0005	0.0005
Cobalt	mg/L	<0.0001	0.0001
Copper	mg/L	<0.0002	0.0002
Iron	mg/L	0.0010	0.0005
Lead	mg/L	<0.0001	0.0001
Manganese	mg/L	<0.0005	0.0005
Mercury	ug/L	<0.01	0.01
Molybdenum	mg/L	0.0016	0.0001
Nickel	mg/L	0.0008	0.0001
Selenium	mg/L	0.0003	0.0001
Silver	mg/L	<0.00005	0.00005
Strontium	mg/L	0.28	0.0005
Thallium	mg/L	<0.0002	0.0002

SRC Group # 2013-11868

SRC ANALYTICAL

Nov 25, 2013

Buffalo Pound Water Admin. Board

Sample #: **2013038541**
Date Sampled: **Nov 19, 2013**
Sample Matrix: **WATER**
Description: **SK05JG0017 11/19/2013 08:43 BUFFALO POUND WATER TREATMENT PLANT - CLEARWELL**

Client PO #: **17174**
Date Received: **Nov 20, 2013**

Analyte	Units	Result	DL
ICP			
Tin	mg/L	<0.0001	0.0001
Titanium	mg/L	<0.0002	0.0002
Uranium	ug/L	<0.1	0.1
Vanadium	mg/L	0.0005	0.0001
Zinc	mg/L	<0.0005	0.0005

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

SRC Group # 2013-11867

SRC ANALYTICAL

Nov 22, 2013

422 Downey Road
Saskatoon, Saskatchewan, Canada
S7N 4N1
(306) 933-6932 or 1-800-240-8808

Buffalo Pound Water Admin. Board
2476 Victoria Avenue
Box 1790
Regina, SK S4P 3C8
Attn: Dan Conrad

Sample #: **2013038488**
Date Sampled: **Nov 19, 2013**
Sample Matrix: **WATER**
Description: **11/19/2013 07:30 RAW WATER**

Client PO #: **17174**
Date Received: **Nov 20, 2013**

Analyte	Units	Result	DL
Inorganic Chemistry			
Total Cyanide (S.A.D.)	ug/L	1	1
ICP			
Aluminum	mg/L	0.18	0.0005
Antimony	mg/L	0.0003	0.0002
Arsenic	ug/L	2.2	0.1
Barium	mg/L	0.072	0.0005
Beryllium	mg/L	<0.0001	0.0001
Boron	mg/L	0.07	0.01
Cadmium	mg/L	<0.00001	0.00001
Chromium	mg/L	<0.0005	0.0005
Cobalt	mg/L	0.0001	0.0001
Copper	mg/L	0.0006	0.0002
Iron	mg/L	0.095	0.0005
Lead	mg/L	0.0002	0.0001
Manganese	mg/L	0.028	0.0005
Mercury	ug/L	<0.01	0.01
Molybdenum	mg/L	0.0017	0.0001
Nickel	mg/L	0.0046	0.0001
Selenium	mg/L	0.0004	0.0001
Silver	mg/L	<0.00005	0.00005
Strontium	mg/L	0.29	0.0005
Thallium	mg/L	<0.0002	0.0002

SRC Group # 2013-11867

SRC ANALYTICAL

Nov 22, 2013

Buffalo Pound Water Admin. Board

Sample #: **2013038488**
Date Sampled: **Nov 19, 2013**
Sample Matrix: **WATER**
Description: **11/19/2013 07:30 RAW WATER**

Client PO #: **17174**
Date Received: **Nov 20, 2013**

Analyte	Units	Result	DL
ICP			
Tin	mg/L	<0.0001	0.0001
Titanium	mg/L	0.0044	0.0002
Uranium	ug/L	1.5	0.1
Vanadium	mg/L	0.0011	0.0001
Zinc	mg/L	0.013	0.0005

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

ALBERTA RESEARCH COUNCIL | ORGANICS ANALYSIS DATA SHEET | ARC SAMPLE NUMBER: T13-2305

Contact: MMMS Buffalo Pound Water Treatment Plant
SapNo : ProjNo : GrpSapNo :
StaNo : SK05JG0017 StaType:
Comment: Raw Lake Water
Matrix : 9
SapDate: 8-Jul-13 @ 0730 Samplers..ID1 :
EndDate: @ ..ID2 :

VOLATILE PRIORITY POLLUTANTS
METHOD: IE505 | TimeLines (days)
SCAN: VPP | from sample date

		Max	Actual
Date Received :	9-Jul-13 by: JMP	-	1 —
Date Extracted:	15-Jul-13 by: SS	7	7 ok
Date Analyzed :	16-Jul-13 by: ss	7	8 *

Raw DataFile : V2305

VMV_CODE	COMPOUND NAME	ug/L	flag	MDL	+\-	VMV_CODE	COMPOUND NAME	ug/L	flag	MDL	+\-
100651	1,1,1,2-Tetrachloroethane	0.0		.1	.1	95227	1,1,1-Trichloroethane	0.0		.1	.1
95224	1,1,2,2-Tetrachloroethane	0.0		.1	.1	95228	1,1,2-Trichloroethane	0.0		.1	.1
95214	1,1-Dichloroethane	0.0		.1	.1	95216	1,1-Dichloroethylene	0.0		.1	.1
100645	1,1-Dichloropropylene	0.0		.1	.1	100652	1,2,3-Trichlorobenzene	0.0		.1	.1
100655	1,2,3-Trichloropropane	0.0		.1	.1	100653	1,2,4-Trichlorobenzene	0.0		.1	.1
100656	1,2,4-Trimethylbenzene	0.0		.1	.1	100640	1,2-Dibromo-3-chloropropane	0.0		.3	.1
100641	1,2-Dibromoethane	0.0		.1	.1	95211	1,2-Dichlorobenzene	0.0		.1	.1
95215	1,2-Dichloroethane	0.0		.1	.1	95218	1,2-Dichloropropane	0.0		.1	.1
100657	1,3,5-Trimethylbenzene	0.0		.1	.1	95212	1,3-Dichlorobenzene	0.0		.1	.1
100644	1,3-Dichloropropane	0.0		.1	.1	95213	1,4-Dichlorobenzene	0.0		.1	.1
100643	2,2-Dichloropropane	0.0		.1	.1	95207	2-Chloroethoxyethylene	0.0		.4	.1
100638	2-Chlorotoluene	0.0		.1	.1	100639	4-Chlorotoluene	0.0		.1	.1
95200	Benzene	0.0		.1	.1	100634	Bromobenzene	0.0		.1	.1
95201	Bromodichloromethane	0.0		.1	.1	95202	Bromoform	0.0		.5	.1
95203	Bromomethane	0.0		.1	.1	95204	Carbon tetrachloride	0.0		.1	.1
95205	Chlorobenzene	0.0		.1	.1	95206	Chloroethane	0.0		.1	.1
95208	Chloroform	0.0		.1	.1	106204	Chloromethane	0.0		.5	.1
95209	Dibromochloromethane	0.0		.1	.1	95210	Dibromomethane	0.0		.1	.1
95221	Ethyl benzene	0.0		.1	.1	100646	Hexachlorobutadiene	0.0		.3	.1
100647	Isopropylbenzene	0.0		.1	.1	102608	MTBE	0.0		.1	.1
95222	Methylene chloride	0.0		2.0	.1	100649	Naphthalene	0.0		.1	.1
95223	Styrene	0.0		.1	.1	100397	TRIHALOMETHANES	0.0		.1	.1
95225	Tetrachloroethylene	0.0		.3	.1	95226	Toluene	0.0		.1	.1
100654	Trichloroethylene	0.0		.1	.1	95229	Trichlorofluoromethane	0.0		.1	.1
95232	Vinyl chloride	0.0		.5	.1	100407	XYLENES	0.0		.1	.1
100642	cis-1,2-Dichloroethylene	0.0		.1	.1	95219	cis-1,3-Dichloropropylene	0.0		.3	.1
95234	m,p-Xylene	0.0		.1	.1	100637	n-Butylbenzene	0.0		.1	.1
100650	n-Propylbenzene	0.0		.1	.1	95233	o-Xylene	0.0		.1	.1
100648	p-Isopropyltoluene	0.0		.1	.1	100635	sec-Butylbenzene	0.0		.1	.1
100636	tert-Butylbenzene	0.0		.1	.1	95217	trans-1,2-Dichloroethylene	0.0		.1	.1
95220	trans-1,3-Dichloropropylene	0.0		.3	.1						

Zero (0) values indicate that the analyte is not DETECTED. MDL - Method Detection Limit

flags B - This analyte is found in the blank as well as the sample. The blank value has been subtracted.
I - Estimated value. The target compound meets the identification criteria, but is less than the MDL.
H - Compound Detected Q - Qualifying ions present but failed the ion ratio limits.
M - This value is calculated by an alternate Raw DataFile.

* - asterik following the value for Actual days taken indicates the prescribed time for that event was exceeded.

** - the Date Sampled is unknown, therefore timeline calculations can not be performed.

Certified For: Ryan Rybchuk
Date: 18-Jul-13
Contact No. (780) 632-8455

Team Leader
Organic Environmental Monitoring
Alberta Innovates - Technology Futures
Bag 4000, Vegreville, Alberta
T9C 1T4

mail to: MMMS Buffalo Pound Water Treatment Plant
attn: Dan Conrad
Box 1790
Regina, Sk S4P 3C8

ALBERTA RESEARCH COUNCIL | ORGANICS ANALYSIS DATA SHEET | ARC SAMPLE NUMBER: T13-2305

Contact: M4MS Buffalo Pound Water Treatment Plant
SapNo : ProjNo : GrpSapNo :
StaNo : SK05JG0017 StaType:
Comment: Raw Lake Water
Matrix : 9
SapDate: 8-Jul-13 @ 0730 Samplers..ID1 :
EndDate: @ ..ID2 :

VOLATILE PRIORITY POLLUTANTS
METHOD: IE505
SCAN: VPP

	TimeLines (days)		
	from sample date		
	Max	Actual	
Date Received : 9-Jul-13 by: JMP	-	1	--
Date Extracted: 15-Jul-13 by: SS	7	7	ok
Date Analyzed : 16-Jul-13 by: ss	7	8	*
Raw DataFile : V2305			

TENTATIVELY IDENTIFIED COMPOUNDS // COMMENTS	ESTIMATED CONCENTRATION
No additional compounds reported	

Laboratory's comments regarding this sample:
Sample received at 17.7 degrees C

The following items regarding the sample were recorded. A Yes notation indicates a problem with the specified item.

Inappropriate Sample Container -
Inappropriate Temperature -
Inappropriate Headspace -
Broken / Leaking Container -

This sample was analyzed by GC/MS. An additional GC/FID scan may have been used for screening purposes and to assist with quantitative data analysis.
Estimated concentrations for tentively identified compounds are calculated assuming an equal response to internal standards.
* - asterik following the value for Actual days taken indicates the prescribed time for that event was exceeded.
** - the Date Sampled is unknown, therefore timeline calculations can not be performed.

Certified For: Ryan Rybchuk
Team Leader
Organic Environmental Monitoring
Alberta Innovates - Technology Futures
Date: 18-Jul-13
Bag 4000, Vegreville, Alberta
Contact No. (780) 632-8455
T9C 1T4

mail to: M4MS Buffalo Pound Water Treatment Plant
attn: Dan Conrad
Box 1790
Regina, Sk
S4P 3C8

"results relate only to the item tested"

Please check the mailing information and inform the lab if changes are required.

ALBERTA RESEARCH COUNCIL | ORGANICS ANALYSIS DATA SHEET | ARC SAMPLE NUMBER: T13-2306

Contact: M44S Buffalo Pound Water Treatment Plant
SupNo : ProjNo : GrpSupNo :
StaNo : SK05JG0017 StaType:
Comment: Raw Lake Water
Matrix : 9
SupDate: 8-Jul-13 @ 0730 Samplers..ID1 :
EndDate: @ ..ID2 :

EXTRACTABLE PRIORITY POLLUTANTS
METHOD: IE340
SCAN: EPP

		Timelines (days) from sample date	
		Max	Actual
Date Received :	9-Jul-13 by: JMP	-	1 --
Date Extracted:	14-Jul-13 by: DRC	7	6 ok
Date Analyzed :	6-Aug-13 by: drc	21	29 *
Raw DataFile :	E2306		

VMV_CODE	COMPOUND NAME	ug/L	flag	MDL	+\-
100730	1,2,4-Trichlorobenzene	0.0		.1	.1
103632	2,3,4,6-Tetrachlorophenol	0.0		.1	.2
100700	2,4-Dichlorophenol	0.0		.1	.2
100703	2,4-Dinitrophenol	0.0		.1	.2
100733	2,6-Dinitrotoluene	0.0		.1	.1
100699	2-Chlorophenol	0.0		.2	.2
100704	2-Nitrophenol	0.0		.1	.2
100698	4-Chloro-3-methylphenol	0.0		.1	.2
100705	4-Nitrophenol	0.0		.1	.2
100710	Acenaphthylene	0.0		.1	.1
100731	Benzidine	0.0		.2	.2
100716	Benzo(a)pyrene	0.0		.1	.2
100715	Benzo(ghi)perylene	0.0		.2	.1
100739	Bis(2-chloroethoxy)methane	0.0		.1	.1
100741	Bis(2-chloroisopropyl)ether	0.0		.1	.1
100743	Butylbenzylphthalate	0.0		.1	.1
100744	Di-n-butylphthalate	.2	H	.1	.1
100718	Dibenzo(ah)anthracene	0.0		.5	.1
100746	Dimethyl phthalate	0.0		.1	.1
100720	Fluorene	0.0		.1	.1
100727	Hexachlorobutadiene	0.0		.5	.1
100729	Hexachloroethane	0.0		.5	.1
100749	Isophorone	0.0		.1	.1
100736	N-Nitrosodiphenylamine	0.0		.1	.1
100735	Nitrobenzene	0.0		.1	.1
100723	Phenanthrene	0.0		.1	.1
100724	Pyrene	0.0		.1	.1

VMV_CODE	COMPOUND NAME	ug/L	flag	MDL	+\-
100734	1,2-Diphenylhydrazine	0.0		.1	.1
100708	2,4,6-Trichlorophenol	0.0		.1	.2
100701	2,4-Dimethylphenol	0.0		.2	.2
100732	2,4-Dinitrotoluene	0.0		.1	.1
100725	2-Chloronaphthalene	0.0		.1	.1
100702	2-Methyl-4,6-dinitrophenol	0.0		.1	.2
100738	4-Bromophenyl phenyl ether	0.0		.1	.1
100742	4-Chlorophenyl phenyl ether	0.0		.1	.1
100709	Acenaphthene	0.0		.1	.1
100711	Anthracene	0.0		.1	.1
100712	Benzo(a)anthracene	0.0		.1	.1
100713	Benzo(b)fluoranthene	0.0		.1	.1
100714	Benzo(k)fluoranthene	0.0		.1	.1
100740	Bis(2-chloroethyl)ether	0.0		.1	.1
100748	Bis(2-ethylhexyl)phthalate	0.0		.1	.1
100717	Chrysene	0.0		.1	.1
100747	Di-n-octyl phthalate	0.0		.1	.1
100745	Diethyl phthalate	0.0		.1	.1
100719	Fluoranthene	0.0		.1	.1
100726	Hexachlorobenzene	0.0		.1	.1
100728	Hexachlorocyclopentadiene	0.0		.1	.1
100721	Indeno(1,2,3-cd)pyrene	0.0		.1	.1
100737	N-Nitroso-di-n-propylamine	0.0		.2	.1
100722	Naphthalene	0.0		.1	.1
100706	Pentachlorophenol	0.0		.1	.2
100707	Phenol	0.0		.1	.2

Zero (0) values indicate that the analyte is not DETECTED. MDL - Method Detection Limit

flags B - This analyte is found in the blank as well as the sample. The blank value has been subtracted.
I - Estimated value. The target compound meets the identification criteria, but is less than the MDL.
H - Compound Detected Q - Qualifying ions present but failed the ion ratio limits.
M - This value is calculated by an alternate Raw DataFile.

* - asterik following the value for Actual days taken indicates the prescribed time for that event was exceeded.

** - the Date Sampled is unknown, therefore timeline calculations can not be performed.

Certified For: Ryan Rybchuk
Team Leader
Organic Environmental Monitoring
Alberta Innovates - Technology Futures
Bag 4000, Vegreville, Alberta
T9C 1T4
Date: 8-Aug-13
Contact No. (780) 632-8455

mail to: M44S Buffalo Pound Water Treatment Plant
attn: Dan Conrad
Box 1790
Regina, Sk S4P 3C8

"results relate only to the item tested"

Please check the mailing information and inform the lab if changes are required. page 1 of 2

ALBERTA RESEARCH COUNCIL | ORGANICS ANALYSIS DATA SHEET | ARC SAMPLE NUMBER: T13-2306

Contact: MWS Buffalo Pound Water Treatment Plant
SupNo : ProjNo : GrpSupNo :
StaNo : SK05JG0017 StaType:
Comment: Raw Lake Water
Matrix : 9
SupDate: 8-Jul-13 @ 0730 Samplers..ID1 :
EndDate: @ ..ID2 :

EXTRACTABLE PRIORITY POLLUTANTS
METHOD: DE340
SCAN: EPP

	TimeLines (days) from sample date	
	Max	Actual
Date Received : 9-Jul-13 by: JMP	-	1 --
Date Extracted: 14-Jul-13 by: DRC	7	6 ok
Date Analyzed : 6-Aug-13 by: drc	21	29 *
Raw DataFile : E2306		

TENTATIVELY IDENTIFIED COMPOUNDS // COMMENTS	ESTIMATED CONCENTRATION
No additional compounds reported	

Laboratory's comments regarding this sample:
Sample received at 18 degrees C

The following items regarding the sample were recorded. A Yes notation indicates a problem with the specified item.

Inappropriate Sample Container -
Inappropriate Temperature -
Inappropriate Headspace -
Broken / Leaking Container -

This sample was analyzed by GC/MS. An additional GC/FID scan may have been used for screening purposes and to assist with quantitative data analysis.
Estimated concentrations for tentively identified compounds are calculated assuming an equal response to internal standards.
* - asterik following the value for Actual days taken indicates the prescribed time for that event was exceeded.
** - the Date Sampled is unknown, therefore timeline calculations can not be performed.

Certified For: Ryan Rybchuk
Date: 8-Aug-13
Contact No. (780) 632-8455

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"results relate only to the item tested"

Please check the mailing information and inform the lab if changes are required.

ALBERTA RESEARCH COUNCIL | ORGANICS ANALYSIS DATA SHEET | ARC SAMPLE NUMBER: T13-2310

Contact: MMMS Buffalo Pound Water Treatment Plant
SmpNo : ProjNo : GrpSmpNo :
StaNo : SK05JG0017 StaType:
Comment: Clearwell
Matrix : 9
SmpDate: 8-Jul-13 @ 0822 Samplers..ID1 :
EndDate: @ ..ID2 :

VOLATILE PRIORITY POLLUTANTS
METHOD: IH505 | TimeLines (days)
SCAN: VPP | from sample date
| Max Actual
Date Received : 9-Jul-13 by: JMP - 1 --
Date Extracted: 15-Jul-13 by: SS 7 7 ok
Date Analyzed : 16-Jul-13 by: ss 7 8 *
Raw DataFile : V2310

VMV_CODE	COMPOUND NAME	ug/L	flag	MDL	+\-	VMV_CODE	COMPOUND NAME	ug/L	flag	MDL	+\-
100651	1,1,1,2-Tetrachloroethane	0.0		.1	.1	95227	1,1,1-Trichloroethane	0.0		.1	.1
95224	1,1,2,2-Tetrachloroethane	0.0		.1	.1	95228	1,1,2-Trichloroethane	0.0		.1	.1
95214	1,1-Dichloroethane	0.0		.1	.1	95216	1,1-Dichloroethylene	0.0		.1	.1
100645	1,1-Dichloropropylene	0.0		.1	.1	100652	1,2,3-Trichlorobenzene	0.0		.1	.1
100655	1,2,3-Trichloropropane	0.0		.1	.1	100653	1,2,4-Trichlorobenzene	0.0		.1	.1
100656	1,2,4-Trimethylbenzene	0.0		.1	.1	100640	1,2-Dibromo-3-chloropropane	0.0		.3	.1
100641	1,2-Dibromoethane	0.0		.1	.1	95211	1,2-Dichlorobenzene	0.0		.1	.1
95215	1,2-Dichloroethane	0.0		.1	.1	95218	1,2-Dichloropropane	0.0		.1	.1
100657	1,3,5-Trimethylbenzene	0.0		.1	.1	95212	1,3-Dichlorobenzene	0.0		.1	.1
100644	1,3-Dichloropropane	0.0		.1	.1	95213	1,4-Dichlorobenzene	0.0		.1	.1
100643	2,2-Dichloropropane	0.0		.1	.1	95207	2-Chloroethoxyethylene	0.0		.4	.1
100638	2-Chlorotoluene	0.0		.1	.1	100639	4-Chlorotoluene	0.0		.1	.1
95200	Benzene	0.0		.1	.1	100634	Bromobenzene	0.0		.1	.1
95201	Bromodichloromethane	2.4	H	.1	.4	95202	Bromoform	0.0		.5	.1
95203	Bromomethane	0.0		.1	.1	95204	Carbon tetrachloride	0.0		.1	.1
95205	Chlorobenzene	0.0		.1	.1	95206	Chloroethane	0.0		.1	.1
95208	Chloroform	50.6	H	.1	2.0	106204	Chloromethane	0.0		.5	.1
95209	Dibromochloromethane	.8	H	.1	.1	95210	Dibromomethane	0.0		.1	.1
95221	Ethyl benzene	0.0		.1	.1	100646	Hexachlorobutadiene	0.0		.3	.1
100647	Isopropylbenzene	0.0		.1	.1	102608	MTBE	0.0		.1	.1
95222	Methylene chloride	0.0		2.0	.1	100649	Naphthalene	0.0		.1	.1
95223	Styrene	0.0		.1	.1	100397	TRIHALOMETHANES	53.8	H	.1	2.0
95225	Tetrachloroethylene	0.0		.3	.1	95226	Toluene	0.0		.1	.1
100654	Trichloroethylene	0.0		.1	.1	95229	Trichlorofluoromethane	0.0		.1	.1
95232	Vinyl chloride	0.0		.5	.1	100407	XYLENES	0.0		.1	.1
100642	cis-1,2-Dichloroethylene	0.0		.1	.1	95219	cis-1,3-Dichloropropylene	0.0		.3	.1
95234	m,p-Xylene	0.0		.1	.1	100637	n-Butylbenzene	0.0		.1	.1
100650	n-Propylbenzene	0.0		.1	.1	95233	o-Xylene	0.0		.1	.1
100648	p-Isopropyltoluene	0.0		.1	.1	100635	sec-Butylbenzene	0.0		.1	.1
100636	tert-Butylbenzene	0.0		.1	.1	95217	trans-1,2-Dichloroethylene	0.0		.1	.1
95220	trans-1,3-Dichloropropylene	0.0		.3	.1						

Zero (0) values indicate that the analyte is not DETECTED. MDL - Method Detection Limit

flags B - This analyte is found in the blank as well as the sample. The blank value has been subtracted.
X - Estimated value. The target compound meets the identification criteria, but is less than the MDL.
H - Compound Detected Q - Qualifying ions present but failed the ion ratio limits.
M - This value is calculated by an alternate Raw DataFile.

* - asterik following the value for Actual days taken indicates the prescribed time for that event was exceeded.

** - the Date Sampled is unknown, therefore timeline calculations can not be performed.

Certified For: Ryan Rybchuk
Date: 18-Jul-13
Contact No. (780) 632-8455

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Regina, Sk S4P 3C8

ALBERTA RESEARCH COUNCIL | ORGANICS ANALYSIS DATA SHEET | ARC SAMPLE NUMBER: T13-2310

Contact: M44S Buffalo Pound Water Treatment Plant
SupNo : ProjNo : GrpSupNo :
StaNo : SK05JG0017 StaType:
Comment: Clearwell
Matrix : 9
SupDate: 8-Jul-13 @ 0822 Samplers..ID1 :
EndDate: @ ..ID2 :

VOLATILE PRIORITY POLLUTANTS
METHOD: IE505
SCAN: VPP

TimeLines (days) from sample date	Max	Actual	
Date Received : 9-Jul-13 by: JMP	-	1	--
Date Extracted: 15-Jul-13 by: SS	7	7	ok
Date Analyzed : 16-Jul-13 by: ss	7	8	*

Raw DataFile : V2310

TENTATIVELY IDENTIFIED COMPOUNDS // COMMENTS	ESTIMATED CONCENTRATION
No additional compounds reported	

Laboratory's comments regarding this sample:
Sample received at 15.8 degrees C

The following items regarding the sample were recorded. A Yes notation indicates a problem with the specified item.

Inappropriate Sample Container -
Inappropriate Temperature -
Inappropriate Headspace -
Broken / Leaking Container -

This sample was analyzed by GC/MS. An additional GC/FID scan may have been used for screening purposes and to assist with quantitative data analysis.
Estimated concentrations for tentively identified compounds are calculated assuming an equal response to internal standards.
* - asterik following the value for Actual days taken indicates the prescribed time for that event was exceeded.
** - the Date Sampled is unknown, therefore timeline calculations can not be performed.

Certified For: Ryan Rybchuk
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"results relate only to the item tested"

Please check the mailing information and inform the lab if changes are required.

ALBERTA RESEARCH COUNCIL | ORGANICS ANALYSIS DATA SHEET | ARC SAMPLE NUMBER: T13-2311

Contact: MWWS Buffalo Pound Water Treatment Plant
SmpNo : ProjNo : GrpSmpNo :
StaNo : SK05JG0017 StaType:
Comment: Clearwell
Matrix : 9
SmpDate: 8-Jul-13 @ 0822 Samplers..ID1 :
EndDate: @ ..ID2 :

EXTRACTABLE PRIORITY POLLUTANTS
METHOD: IE340 | TimeLines (days)
SCAN: EPP | from sample date

		Max	Actual	
Date Received :	9-Jul-13 by: JMP	-	1	—
Date Extracted:	14-Jul-13 by: DRC	7	6	ok
Date Analyzed :	6-Aug-13 by: drc	21	29	*

Raw DataFile : E2311

VMV_CODE	COMPOUND NAME	ug/L	flag	MDL	+\-
100730	1,2,4-Trichlorobenzene	0.0		.1	.1
103632	2,3,4,6-Tetrachlorophenol	0.0		.1	.2
100700	2,4-Dichlorophenol	0.0		.1	.2
100703	2,4-Dinitrophenol	0.0		.1	.2
100733	2,6-Dinitrotoluene	0.0		.1	.1
100699	2-Chlorophenol	0.0		.2	.2
100704	2-Nitrophenol	0.0		.1	.2
100698	4-Chloro-3-methylphenol	0.0		.1	.2
100705	4-Nitrophenol	0.0		.1	.2
100710	Acenaphthylene	0.0		.1	.1
100731	Benzidine	0.0		.2	.2
100716	Benzo(a)pyrene	0.0		.1	.2
100715	Benzo(ghi)perylene	0.0		.2	.1
100739	Bis(2-chloroethoxy)methane	0.0		.1	.1
100741	Bis(2-chloroisopropyl)ether	0.0		.1	.1
100743	Butylbenzylphthalate	0.0		.1	.1
100744	Di-n-butylphthalate	0.0		.1	.1
100718	Dibenzo(ah)anthracene	0.0		.5	.1
100746	Dimethyl phthalate	0.0		.1	.1
100720	Fluorene	0.0		.1	.1
100727	Hexachlorobutadiene	0.0		.5	.1
100729	Hexachloroethane	0.0		.5	.1
100749	Isophorone	0.0		.1	.1
100736	N-Nitrosodiphenylamine	0.0		.1	.1
100735	Nitrobenzene	0.0		.1	.1
100723	Phenanthrene	0.0		.1	.1
100724	Pyrene	0.0		.1	.1

VMV_CODE	COMPOUND NAME	ug/L	flag	MDL	+\-
100734	1,2-Diphenylhydrazine	0.0		.1	.1
100708	2,4,6-Trichlorophenol	0.0		.1	.2
100701	2,4-Dimethylphenol	0.0		.2	.2
100732	2,4-Dinitrotoluene	0.0		.1	.1
100725	2-Chloronaphthalene	0.0		.1	.1
100702	2-Methyl-4,6-dinitrophenol	0.0		.1	.2
100738	4-Bromophenyl phenyl ether	0.0		.1	.1
100742	4-Chlorophenyl phenyl ether	0.0		.1	.1
100709	Acenaphthene	0.0		.1	.1
100711	Anthracene	0.0		.1	.1
100712	Benzo(a)anthracene	0.0		.1	.1
100713	Benzo(b)fluoranthene	0.0		.1	.1
100714	Benzo(k)fluoranthene	0.0		.1	.1
100740	Bis(2-chloroethyl)ether	0.0		.1	.1
100748	Bis(2-ethylhexyl)phthalate	0.0		.1	.1
100717	Chrysene	0.0		.1	.1
100747	Di-n-octyl phthalate	0.0		.1	.1
100745	Diethyl phthalate	0.0		.1	.1
100719	Fluoranthene	0.0		.1	.1
100726	Hexachlorobenzene	0.0		.1	.1
100728	Hexachlorocyclopentadiene	0.0		.1	.1
100721	Indeno(1,2,3-cd)pyrene	0.0		.1	.1
100737	N-Nitroso-di-n-propylamine	0.0		.2	.1
100722	Naphthalene	0.0		.1	.1
100706	Pentachlorophenol	0.0		.1	.2
100707	Phenol	0.0		.1	.2

Zero (0) values indicate that the analyte is not DETECTED. MDL - Method Detection Limit

flags B - This analyte is found in the blank as well as the sample. The blank value has been subtracted.
I - Estimated value. The target compound meets the identification criteria, but is less than the MDL.
H - Compound Detected Q - Qualifying ions present but failed the ion ratio limits.
M - This value is calculated by an alternate Raw DataFile.

* - asterik following the value for Actual days taken indicates the prescribed time for that event was exceeded.

** - the Date Sampled is unknown, therefore timeline calculations can not be performed.

Certified For: Ryan Rybchuk
Team Leader
Organic Environmental Monitoring
Alberta Innovates - Technology Futures
Date: 8-Aug-13
Contact No. (780) 632-8455
Bag 4000, Vegreville, Alberta
T9C 1T4

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"results relate only to the item tested"

Please check the mailing information and inform the lab if changes are required. page 1 of 2

ALBERTA RESEARCH COUNCIL | ORGANICS ANALYSIS DATA SHEET | ARC SAMPLE NUMBER: T13-2311

Contact: MWS Buffalo Pound Water Treatment Plant
SmpNo : ProjNo : GrpSmpNo :
StaNo : SK05JG0017 StaType:
Comment: Clearwell
Matrix : 9
SmpDate: 8-Jul-13 @ 0822 Samplers..ID1 :
EndDate: @ ..ID2 :

EXTRACTABLE PRIORITY POLLUTANTS
METHOD: IE340 | TimeLines (days)
SCAN: EPP | from sample date

	Max	Actual	
Date Received : 9-Jul-13 by: JMP	-	1	--
Date Extracted: 14-Jul-13 by: DRC	7	6	ok
Date Analyzed : 6-Aug-13 by: drc	21	29	*

Raw DataFile : E2311

TENTATIVELY IDENTIFIED COMPOUNDS // COMMENTS	ESTIMATED CONCENTRATION
No additional compounds reported	

Laboratory's comments regarding this sample:
Sample received at 13.1 degrees C

The following items regarding the sample were recorded. A Yes notation indicates a problem with the specified item.

Inappropriate Sample Container -
Inappropriate Temperature -
Inappropriate Headspace -
Broken / Leaking Container -

This sample was analyzed by GC/MS. An additional GC/FID scan may have been used for screening purposes and to assist with quantitative data analysis.
Estimated concentrations for tentively identified compounds are calculated assuming an equal response to internal standards.
* - asterik following the value for Actual days taken indicates the prescribed time for that event was exceeded.
** - the Date Sampled is unknown, therefore timeline calculations can not be performed.

Certified For: Ryan Rybchuk
Date: 8-Aug-13

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"results relate only to the item tested"

Please check the mailing information and inform the lab if changes are required.

ALBERTA RESEARCH COUNCIL — ORGANICS ANALYSIS DATA SHEET — ARC SAMPLE NUMBER: T13-2312

PESTICIDE ANALYSIS

Contact: MMM Buffalo Pound Water Treatment Plant
SmpNo : ProjNo : GrpSmpNo :
StaNo : SK05JG0017 StaType:
Comment: Clearwell
Matrix : 9
SmpDate: 8-Jul-13 @ 0822 Samplers..ID1 :
EndDate: @ ..ID2 :

METHOD: IM443 | TimeLines (days)
SCAN: PESTN | from sample date
| Max Actual
Date Received : 9-Jul-13 by: JMP - 1 --
Date Extracted: 10-Jul-13 by: MG 10 2 ok
Date Analyzed : 11-Jul-13 by: KLS 20 3 ok
Raw DataFile : p2312

VAV_CODE	COMPOUND NAME	ug/L	flag	MDL	+\-	VAV_CODE	COMPOUND NAME	ug/L	flag	MDL	+\-
100667	2,4-D	0.000		.005	.002	100668	2,4-DB	0.000		.005	.002
100669	2,4-DP	0.000		.005	.002	99888	2,4-dichlorophenol	0.000		.010	.004
99887	4-chloro-2-methylphenol	0.000		.010	.004	97938	Aldicarb	0.000		.100	.020
102929	Aldrin	0.000		.005	.002	106769	Aminopyralid	0.000		.010	.003
100674	Atrazine	0.000		.005	.002	99897	Bentazon	0.000		.005	.002
100675	Bromacil	0.000		.030	.004	100676	Bromoxynil	0.000		.005	.002
100677	Carbathiin (Carboxin)	0.000		.100	.020	99889	Chlorothalonil	0.000		.005	.002
100684	Chlorpyrifos (Dursban)	0.000		.005	.002	99881	Clodinafop acid metabolite	0.000		.020	.004
99880	Clodinafop-propargyl	0.000		.040	.056	100688	Clopyralid (Lontrel)	0.000		.020	.004
100678	Cyanazine	0.000		.050	.008	102609	Desethyl atrazine	0.000		.050	.008
102610	Desisopropyl atrazine	0.000		.050	.008	100679	Diazinon	0.000		.005	.002
103639	Dicamba (Banvel)	0.000		.005	.002	100681	Diclofop-methyl (Hoe Grass)	0.000		.020	.004
102930	Dieldrin	0.000		.005	.002	102618	Dimethoate (Cygon)	0.000		.050	.007
100682	Disulfoton (Di-Syston)	0.000		.200	.050	100683	Diuron	0.000		.200	.250
100685	Ethalfluralin (Edge)	0.000		.005	.002	100686	Ethion	0.000		.100	.020
99898	Ethofumesate	0.000		.005	.002	102613	Fenoxaprop-P-ethyl	0.000		.040	.008
99894	Fluazifop	0.000		.010	.004	99895	Fluroxypyr	0.000		.010	.004
100687	Guthion	0.000		.200	.020	99892	Hexaconazole	0.000		.050	.008
102088	Imazamethabenz-methyl(Assert)	0.000		.050	.044	103141	Imazamox	0.000		.020	.002
102612	Imazethapyr	0.000		.020	.004	99890	Iprodione	0.000		.020	.004
99899	Linuron	0.000		.020	.004	100690	MCPA	0.000		.005	.002
100691	MCPB	0.000		.020	.004	100692	MCPP (Mecoprop)	0.000		.005	.002
100689	Malathion	0.000		.050	.008	99893	Metalaxyl-M	0.000		.010	.004
97934	Methomyl	0.000		.100	.020	102935	Metolachlor	0.000		.005	.002
103631	Metribuzin	0.000		.010	.004	74365	Napropamide	0.000		.020	.004
97933	Oxycarboxin	0.000		.050	.008	103630	Parathion	0.000		.010	.004
100694	Phorate (Thimet)	0.000		.005	.002	100693	Picloram (Tordon)	0.000		.005	.002

Zero (0) values indicate that the analyte is not DETECTED. MDL - Method Detection Limit

flags B - This analyte is found in the blank as well as the sample. The blank value has been subtracted.
I - Estimated value. The target compound meets the identification criteria, but is less than the MDL.
H - Compound Detected Q - Qualifying ions present but failed the ion ratio limits.
M - This value is calculated by an alternate Raw DataFile.

* - asterik following the value for Actual days taken indicates the prescribed time for that event was exceeded.

** - the Date Sampled is unknown, therefore timeline calculations can not be performed.

Certified For: Ryan Rybchuk
Date: 16-Jul-13
Contact No. (780) 632-8455

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"results relate only to the item tested"

Please check the mailing information and inform the lab if changes are required. page 1 of 1

ALBERTA RESEARCH COUNCIL — ORGANICS ANALYSIS DATA SHEET — ARC SAMPLE NUMBER: T13-2312

PESTICIDE ANALYSIS

Contact: MMB Buffalo Pound Water Treatment Plant
SapNo : ProjNo : GrpSapNo :
StaNo : SK05JG0017 StaType:
Comment: Clearwell
Matrix : 9
SapDate: 8-Jul-13 @ 0822 Samplers..ID1 :
EndDate: @ ..ID2 :

METHOD: EM443
SCAN: PESTE

TimeLines (days)		
from sample date		
	Max	Actual
Date Received : 9-Jul-13 by: JMP	-	1
Date Extracted: 10-Jul-13 by: MG	10	2 ok
Date Analyzed : 11-Jul-13 by: KLS	20	3 ok

Raw DataFile : p2312

VMV_CODE	COMPOUND NAME	ug/L	flag	MDL	+\-	VMV_CODE	COMPOUND NAME	ug/L	flag	MDL	+\-
99891	Propiconazole	0.000		.050	.008	102614	Pyridaben	0.000		.020	.004
102611	Quinclorac	0.000		.005	.002	99896	Quizalofop	0.000		.030	.004
103824	Simazine	0.000		.010	.004	100695	Terbufos	0.000		.030	.004
74474	Thiamethoxam	0.000		.050	.008	100696	Triallate (Avadex BW)	0.000		.005	.002
103825	Triclopyr	0.000		.010	.004	100697	Trifluralin (Treflan)	0.000		.005	.002
97932	Vinclozolin	0.000		.010	.004	100670	alpha-BHC	0.000		.005	.002
100671	alpha-Endosulfan	0.000		.005	.002	100672	gamma-BHC (Lindane)	0.000		.005	.002
100673	p,p-Methoxychlor	0.000		.030	.004						

Zero (0) values indicate that the analyte is not DETECTED. MDL - Method Detection Limit

flags B - This analyte is found in the blank as well as the sample. The blank value has been subtracted.
I - Estimated value. The target compound meets the identification criteria, but is less than the MDL.
H - Compound Detected Q - Qualifying ions present but failed the ion ratio limits.
M - This value is calculated by an alternate Raw DataFile.

* - asterik following the value for Actual days taken indicates the prescribed time for that event was exceeded.

** - the Date Sampled is unknown, therefore timeline calculations can not be performed.

Certified For: Ryan Rybchuk
Date: 16-Jul-13
Contact No. (780) 632-8455

Team Leader
Organic Environmental Monitoring
Alberta Innovates - Technology Futures
Bag 4000, Vegreville, Alberta
T9C 1T4

mail to: MMB Buffalo Pound Water Treatment Plant
attn: Dan Conrad
Box 1790
Regina, Sk S4P 3C8

"results relate only to the item tested"

Please check the mailing information and inform the lab if changes are required. page 1 of 1

ALBERTA RESEARCH COUNCIL | ORGANICS ANALYSIS DATA SHEET | ARC SAMPLE NUMBER: T13-2313

Contact: M44S Buffalo Pound Water Treatment Plant
SmpNo : ProjNo : GrpSmpNo :
StaNo : SK05JG0017 StaType:
Comment: Clearwell
Matrix : 9
SmpDate: 8-Jul-13 @ 0822 Samplers..ID1 :
EndDate: @ ..ID2 :

POLYCYCLIC AROMATIC HYDROCARBONS
METHOD: - - -
SCAN: PAH

	TimeLines (days) from sample date	
	Max	Actual
Date Received : 9-Jul-13 by: JMP	-	1 --
Date Extracted: 11-Jul-13 by: rmr	11	3 ok
Date Analyzed : 11-Jul-13 by: RmR	21	3 ok

Raw DataFile : p2313

GC/MSD SIM DATA

VHV_CODE	COMPOUND NAME	ug/L	MDL flag
107977	1-Methylnaphthalene	0.00	.01
103142	3-Methylchloranthrene	0.00	.01
103144	Acenaphthene	0.00	.01
103146	Acridine	0.00	.01
103148	Benzo(a)anthracene	0.00	.01
103150	Benzo(b,j,k)fluoranthene	0.00	.01
103152	Benzo(e)pyrene	0.00	.01
103154	Chrysene	0.00	.01
103156	Dibenzo(a,i)pyrene	0.00	.01
103158	Dibenzo(ah)anthracene	0.00	.01
103160	Fluorene	0.00	.01
103162	Naphthalene	0.00	.01
103163	Phenanthrene	0.00	.01
103761	Retene	0.00	.01
107978	2-Methylnaphthalene	0.00	.01
103143	7,12-Dimethylbenz(a)anthracen	0.00	.01
103145	Acenaphthylene	0.00	.01
103147	Anthracene	0.00	.01
103149	Benzo(a)pyrene	0.00	.01
103151	Benzo(c)phenanthrene	0.00	.01
103153	Benzo(ghi)perylene	0.00	.01
103155	Dibenzo(a,h)pyrene	0.00	.01
103157	Dibenzo(a,l)pyrene	0.00	.01
103159	Fluoranthene	0.00	.01
103161	Indeno(1,2,3-cd)pyrene	0.00	.01
107132	Perylene	0.00	.01
103164	Pyrene	0.00	.01

ARC Remarks:

Zero (0) values indicate that the analyte is not DETECTED. MDL - Method Detection Limit

flags B - This analyte is found in the blank as well as the sample. The blank value has been subtracted.
X - Estimated value. The target compound meets the identification criteria, but is less than the MDL.
H - Compound Detected Q - Qualifying ions present but failed the ion ratio limits.
M - This value is calculated by an alternate Raw DataFile.

* - asterik following the value for Actual days taken indicates the prescribed time for that event was exceeded.

** - the Date Sampled is unknown, therefore timeline calculations can not be performed.

Certified For: Ryan Rybchuk
Date: 19-Jul-13
Contact No. (780) 632-8455

Team Leader
Organic Environmental Monitoring
Alberta Innovates - Technology Futures
Bag 4000, Vegreville, Alberta
T9C 1T4

mail to: M44S Buffalo Pound Water Treatment Plant
attn: Dan Conrad
Box 1790
Regina, Sk S4P 3C8

"results relate only to the item tested"

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ALBERTA RESEARCH COUNCIL | ORGANICS ANALYSIS DATA SHEET | ARC SAMPLE NUMBER: T13-2314

GLYPHOSATE, AMPA AND GLUFOSINATE

Contact: MMS Buffalo Pound Water Treatment Plant
SmpNo : ProjNo : GrpSmpNo :
StaNo : SK05JG0017 StaType:
Comment: Clearwell
Matrix : 9
SmpDate: 8-Jul-13 @ 0822 Samplers..ID1 :
EndDate: @ ..ID2 :

METHOD: EC/16 | TimeLines (days)
SCAN: GLYPH | from sample date
| Max Actual
Date Received : 9-Jul-13 by: JMP - 1 --
Date Extracted: 9-Jul-13 by: JS 10 1 ok
Date Analyzed : 16-Jul-13 by: JDM 60 8 ok
Raw DataFile : g2314

VMV_CODE	COMPOUND NAME	ug/L	flag	MDL	+\-	VMV_CODE	COMPOUND NAME	ug/L	flag	MDL	+\-
103453	Aminomethyl Phosphonic Acid	0.000		.100	1.030	103626	Glufosinate	0.000		1.000	1.420
103452	Glyphosate	0.000		.100	.560						

Zero (0) values indicate that the analyte is not DETECTED. MDL - Method Detection Limit

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X - Estimated value. The target compound meets the identification criteria, but is less than the MDL.
H - Compound Detected Q - Qualifying ions present but failed the ion ratio limits.
M - This value is calculated by an alternate Raw DataFile.

* - asterik following the value for Actual days taken indicates the prescribed time for that event was exceeded.

** - the Date Sampled is unknown, therefore timeline calculations can not be performed.

Certified For: Ryan Rybchuk
Date: 22-Jul-13
Contact No. (780) 632-8455

Team Leader
Organic Environmental Monitoring
Alberta Innovates - Technology Futures
Bag 4000, Vegreville, Alberta
T9C 1T4

mail to: MMS Buffalo Pound Water Treatment Plant
attn: Dan Conrad
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Regina, Sk S4P 3C8

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Please check the mailing information and inform the lab if changes are required. page 1 of 1

ALBERTA RESEARCH COUNCIL | ORGANICS ANALYSIS DATA SHEET | ARC SAMPLE NUMBER: T13-2307

PESTICIDE ANALYSIS

Contact: M445 Buffalo Pound Water Treatment Plant
SmpNo : ProjNo : GrpSmpNo :
StaNo : SK05JG0017 StaType:
Comment: Raw Lake Water
Matrix : 9
SmpDate: 8-Jul-13 @ 0730 Samplers..ID1 :
EndDate: @ ..ID2 :

METHOD: E4443 | TimeLines (days)
SCAN: PESTE | from sample date
| Max Actual
Date Received : 9-Jul-13 by: JMP - 1 —
Date Extracted: 10-Jul-13 by: MG 10 2 ok
Date Analyzed : 11-Jul-13 by: KLS 20 3 ok
Raw DataFile : p2307

VAV_CODE	COMPOUND NAME	ug/L	flag	MDL	+\-	VAV_CODE	COMPOUND NAME	ug/L	flag	MDL	+\-
100667	2,4-D	.028	H	.005	.002	100668	2,4-DB	0.000		.005	.002
100669	2,4-DP	0.000		.005	.002	99888	2,4-dichlorophenol	0.000		.010	.004
99887	4-chloro-2-methylphenol	0.000		.010	.004	97938	Aldicarb	0.000		.100	.020
102929	Aldrin	0.000		.005	.002	106769	Aminopyralid	0.000		.010	.003
100674	Atrazine	0.000		.005	.002	99897	Bentazon	0.000		.005	.002
100675	Bromacil	0.000		.030	.004	100676	Bromoxynil	0.000		.005	.002
100677	Carbathiin (Carboxin)	0.000		.100	.020	99889	Chlorothalonil	0.000		.005	.002
100684	Chlorpyrifos (Dursban)	0.000		.005	.002	99881	Clodinafop acid metabolite	0.000		.020	.004
99880	Clodinafop-propargyl	0.000		.040	.056	100688	Clopyralid (Lontrel)	0.000		.020	.004
100678	Cyanazine	0.000		.050	.008	102609	Desethyl atrazine	0.000		.050	.008
102610	Desisopropyl atrazine	0.000		.050	.008	100679	Diazinon	0.000		.005	.002
103639	Dicamba (Banvel)	0.000		.005	.002	100681	Diclofop-methyl (Hoe Grass)	0.000		.020	.004
102930	Dieldrin	0.000		.005	.002	102618	Dimethoate (Cygon)	0.000		.050	.007
100682	Disulfoton (Di-Syston)	0.000		.200	.050	100683	Diuron	0.000		.200	.250
100685	Ethalfluralin (Edge)	0.000		.005	.002	100686	Ethion	0.000		.100	.020
99898	Ethofumesate	0.000		.005	.002	102613	Fenoxaprop-P-ethyl	0.000		.040	.008
99894	Fluazifop	0.000		.010	.004	99895	Fluroxypyr	.011	H	.010	.004
100687	Guthion	0.000		.200	.020	99892	Hexaconazole	0.000		.050	.008
102088	Imazamethabenz-methyl(Assert)	0.000		.050	.044	103141	Imazamox	0.000		.020	.002
102612	Imazethapyr	0.000		.020	.004	99890	Iprodione	0.000		.020	.004
99899	Linuron	0.000		.020	.004	100690	MCPA	.007	H	.005	.002
100691	MCPB	0.000		.020	.004	100692	MCPP (Mecoprop)	0.000		.005	.002
100689	Malathion	0.000		.050	.008	99893	Metalaxyl-M	0.000		.010	.004
97934	Methomyl	0.000		.100	.020	102935	Metolachlor	0.000		.005	.002
103631	Metribuzin	0.000		.010	.004	74365	Napropamide	0.000		.020	.004
97933	Oxycarboxin	0.000		.050	.008	103630	Parathion	0.000		.010	.004
100694	Phorate (Thimet)	0.000		.005	.002	100693	Picloram (Tordon)	0.000		.005	.002

Zero (0) values indicate that the analyte is not DETECTED. MDL - Method Detection Limit

flags B - This analyte is found in the blank as well as the sample. The blank value has been subtracted.
X - Estimated value. The target compound meets the identification criteria, but is less than the MDL.
H - Compound Detected Q - Qualifying ions present but failed the ion ratio limits.
M - This value is calculated by an alternate Raw DataFile.

* - asterik following the value for Actual days taken indicates the prescribed time for that event was exceeded.

** - the Date Sampled is unknown, therefore timeline calculations can not be performed.

Certified For: Ryan Rybchuk
Date: 16-Jul-13
Contact No. (780) 632-8455

Team Leader
Organic Environmental Monitoring
Alberta Innovates - Technology Futures
Bag 4000, Vegreville, Alberta
T9C 1T4

mail to: M445 Buffalo Pound Water Treatment Plant
attn: Dan Conrad
Box 1790
Regina, Sk S4P 3C8

"results relate only to the item tested"

Please check the mailing information and inform the lab if changes are required. page 1 of 1

ALBERTA RESEARCH COUNCIL | ORGANICS ANALYSIS DATA SHEET | ARC SAMPLE NUMBER: T13-2307

Contact: M4MS Buffalo Pound Water Treatment Plant
SmpNo : ProjNo : GrpSmpNo :
StaNo : SK05JG0017 StaType:
Comment: Raw Lake Water
Matrix : 9
SmpDate: 8-Jul-13 @ 0730 Samplers..ID1 :
EndDate: @ ..ID2 :

PESTICIDE ANALYSIS
METHOD: EM443
SCAN: PESTK

	TimeLines (days) from sample date	
	Max	Actual
Date Received : 9-Jul-13 by: JMP	-	1
Date Extracted: 10-Jul-13 by: MG	10	2 ok
Date Analyzed : 11-Jul-13 by: KLS	20	3 ok

Raw DataFile : p2307

VMV_CODE	COMPOUND NAME	ug/L	flag	MDL	+\-	VMV_CODE	COMPOUND NAME	ug/L	flag	MDL	+\-
99891	Propiconazole	0.000		.050	.008	102614	Pyridaben	0.000		.020	.004
102611	Quinclorac	0.000		.005	.002	99896	Quizalofop	0.000		.030	.004
103824	Simazine	0.000		.010	.004	100695	Terbufos	0.000		.030	.004
74474	Thiamethoxam	0.000		.050	.008	100696	Triallate (Avadex BW)	0.000		.005	.002
103825	Triclopyr	0.000		.010	.004	100697	Trifluralin (Treflan)	0.000		.005	.002
97932	Vinclozolin	0.000		.010	.004	100670	alpha-BHC	0.000		.005	.002
100671	alpha-Endosulfan	0.000		.005	.002	100672	gamma-BHC (Lindane)	0.000		.005	.002
100673	p,p-Methoxychlor	0.000		.030	.004						

Zero (0) values indicate that the analyte is not DETECTED. MDL - Method Detection Limit

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Certified For: Ryan Rybchuk
Team Leader
Organic Environmental Monitoring
Alberta Innovates - Technology Futures
Bag 4000, Vegreville, Alberta
T9C 1T4
Date: 16-Jul-13
Contact No. (780) 632-8455

mail to: M4MS Buffalo Pound Water Treatment Plant
attn: Dan Conrad
Box 1790
Regina, Sk S4P 3C8

"results relate only to the item tested"

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page 1 of 1

ALBERTA RESEARCH COUNCIL | ORGANICS ANALYSIS DATA SHEET | ARC SAMPLE NUMBER: T13-2308

POLYCYCLIC AROMATIC HYDROCARBONS

Contact: MWWS Buffalo Pound Water Treatment Plant
SmpNo : ProjNo : GrpSmpNo :
StaNo : SK05JG0017 StaType:
Comment: Raw Lake Water
Matrix : 9
SmpDate: 8-Jul-13 @ 0730 Samplers..ID1 :
EndDate: @ ..ID2 :

METHOD: - - - | TimeLines (days)
SCAN: PAH | from sample date
| Max Actual
Date Received : 9-Jul-13 by: JMP - 1 --
Date Extracted: 11-Jul-13 by: rmr 11 3 ok
Date Analyzed : 11-Jul-13 by: RmR 21 3 ok
Raw DataFile : p2308

VMV_CODE	COMPOUND NAME	ug/L	MDL flag	VMV_CODE	COMPOUND NAME	ug/L	MDL flag
GC/MSD SIM DATA							
107977	1-Methylnaphthalene	0.00	.01	107978	2-Methylnaphthalene	0.00	.01
103142	3-Methylchloranthrene	0.00	.01	103143	7,12-Dimethylbenz(a)anthracen	0.00	.01
103144	Acenaphthene	0.00	.01	103145	Acenaphthylene	0.00	.01
103146	Acridine	0.00	.01	103147	Anthracene	0.00	.01
103148	Benzo(a)anthracene	0.00	.01	103149	Benzo(a)pyrene	0.00	.01
103150	Benzo(b,j,k)fluoranthene	0.00	.01	103151	Benzo(c)phenanthrene	0.00	.01
103152	Benzo(e)pyrene	0.00	.01	103153	Benzo(ghi)perylene	0.00	.01
103154	Chrysene	0.00	.01	103155	Dibenzo(a,h)pyrene	0.00	.01
103156	Dibenzo(a,i)pyrene	0.00	.01	103157	Dibenzo(a,l)pyrene	0.00	.01
103158	Dibenzo(ah)anthracene	0.00	.01	103159	Fluoranthene	0.00	.01
103160	Fluorene	0.00	.01	103161	Indeno(1,2,3-cd)pyrene	0.00	.01
103162	Naphthalene	0.00	.01	107132	Perylene	0.00	.01
103163	Phenanthrene	0.00	.01	103164	Pyrene	0.00	.01
103761	Retene	0.00	.01				

ARC Remarks:
Sample received at 15.1 degrees C

Zero (0) values indicate that the analyte is not DETECTED. MDL - Method Detection Limit
flags B - This analyte is found in the blank as well as the sample. The blank value has been subtracted.
X - Estimated value. The target compound meets the identification criteria, but is less than the MDL.
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* - asterik following the value for Actual days taken indicates the prescribed time for that event was exceeded.
** - the Date Sampled is unknown, therefore timeline calculations can not be performed.

Certified For: Ryan Rybchuk
Date: 19-Jul-13
Contact No. (780) 632-8455

Team Leader
Organic Environmental Monitoring
Alberta Innovates - Technology Futures
Bag 4000, Vegreville, Alberta
T9C 1T4

mail to: MWWS Buffalo Pound Water Treatment Plant
attn: Dan Conrad
Box 1790
Regina, Sk S4P 3C8

"results relate only to the item tested"

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ALBERTA RESEARCH COUNCIL — ORGANICS ANALYSIS DATA SHEET — ARC SAMPLE NUMBER: T13-2309

GLYPHOSATE, AMPA AND GLUFOSINATE

Contact: M4#5 Buffalo Pound Water Treatment Plant
SupNo : ProjNo : GrpSupNo :
StaNo : SK05JO0017 StaType:
Comment: Raw Lake Water
Matrix : 9
SupDate: 8-Jul-13 @ 0730 Samplers..ID1 :
EndDate: @ ..ID2 :

METHOD: EC/16 | SCAN: GLYPH

	TimeLines (days) from sample date	
	Max	Actual
Date Received : 9-Jul-13 by: JMP	-	1 --
Date Extracted: 9-Jul-13 by: JS	10	1 ok
Date Analyzed : 16-Jul-13 by: JIM	60	8 ok
Raw DataFile : g2309		

VMV_CODE	COMPOUND NAME	ug/L	flag	MDL	+\-	VMV_CODE	COMPOUND NAME	ug/L	flag	MDL	+\-
103453	Aminomethyl Phosphonic Acid	0.000		.100	1.030	103626	Glufosinate	0.000		1.000	1.420
103452	Glyphosate	0.000		.100	.560						

Zero (0) values indicate that the analyte is not DETECTED. MDL - Method Detection Limit

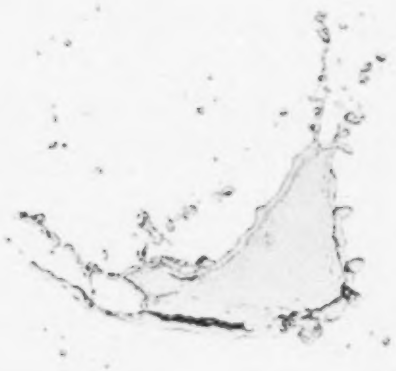
flags B - This analyte is found in the blank as well as the sample. The blank value has been subtracted.
I - Estimated value. The target compound meets the identification criteria, but is less than the MDL.
H - Compound Detected Q - Qualifying ions present but failed the ion ratio limits.
M - This value is calculated by an alternate Raw DataFile.

* - asterik following the value for Actual days taken indicates the prescribed time for that event was exceeded.

** - the Date Sampled is unknown, therefore timeline calculations can not be performed.

Certified For: Ryan Rybchuk Team Leader mail to: M4#5 Buffalo Pound Water Treatment Plant

APPENDIX 2



Financial Statements - 2013

BUFFALO POUND WATER ADMINISTRATION BOARD
DECEMBER 31, 2013

Deloitte.

Deloitte LLP
2103 - 11th Avenue
Mezzanine Level
Bank of Montreal Building
Regina, SK S4P 3Z8
Canada

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INDEPENDENT AUDITOR'S REPORT

To the Chairman and Members of the Buffalo Pound Water Administration Board

We have audited the accompanying financial statements of the Buffalo Pound Water Administration Board, which comprise the statement of financial position at December 31, 2013, and the statements of operations, reserve for replacement of capital assets, change in net financial assets and cash flows for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian public sector accounting standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements present fairly, in all material respects, the financial position of the Buffalo Pound Water Administration Board as at December 31, 2013, and the results of its operations, change in its net financial assets and its cash flows for the year then ended in accordance with Canadian public sector accounting standards.

Deloitte LLP

Chartered Accountants

March 26, 2014
Regina, Saskatchewan

Buffalo Pound Water Administration Board
STATEMENT OF FINANCIAL POSITION
[in dollars]

As at December 31

	2013	2012
FINANCIAL ASSETS		
Cash	**3,225,668**	2,899,524
Accounts receivable		
City of Regina	**662,761**	735,675
City of Moose Jaw	**251,300**	223,424
Other	**166,175**	241,920
Deficit receivable (Note 1)		
City of Regina	**-**	115,461
City of Moose Jaw	**-**	21,910
Total financial assets	**4,305,904**	4,237,914
FINANCIAL LIABILITIES		
Accounts payable and accrued liabilities	**216,061**	885,915
20% Refundable rate (Note 2)		
City of Regina	**1,169,942**	1,110,771
City of Moose Jaw	**412,130**	393,320
Surplus refundable (Note 1)		
City of Regina	**15,995**	-
City of Moose Jaw	**3,101**	-
Employee benefit obligations (Note 5)	**442,784**	459,349
Total financial liabilities	**2,260,013**	2,849,355
Net financial assets	**2,045,891**	1,388,559
NON-FINANCIAL ASSETS		
Inventory of chemicals	**85,342**	57,146
Prepaid expenses	**12,642**	12,632
Tangible capital assets (Note 6)	**23,094,069**	24,521,136
Accumulated surplus (Note 8)	**25,237,944**	25,979,473

See accompanying notes.

SIGNED ON BEHALF OF THE BOARD

Board Member

Board Member

Buffalo Pound Water Administration Board

STATEMENT OF OPERATIONS

[in dollars]

For the year ended December 31

	Budget (unaudited)	2013	2012
REVENUES			
General water rate charges			
City of Regina operating contributions	6,323,062	**6,625,680**	6,320,880
City of Moose Jaw operating contributions	1,372,622	**1,284,680**	1,199,574
City of Regina capital contributions	632,306	**662,568**	632,088
City of Moose Jaw capital contributions	137,262	**128,468**	119,957
	8,465,252	**8,701,396**	8,272,499
Refundable water rate	1,539,136	**1,582,072**	1,504,091
Power charges	269,663	**277,729**	258,768
Miscellaneous water sales	103,950	**112,552**	115,177
Interest	15,000	**37,430**	29,149
Other	7,380	**5,790**	6,652
	10,400,381	**10,716,969**	10,186,336
EXPENSES			
Employee wages and benefits (Schedule 2)	3,054,200	**2,923,329**	2,678,619
Amortization of tangible capital assets (Schedule 3)	1,717,733	**1,717,733**	1,764,694
Utilities (Schedule 2)	1,830,000	**1,844,845**	1,729,461
Chemicals (Schedule 2)	1,727,500	**2,001,526**	2,219,605
Refundable water rate	1,539,136	**1,582,072**	1,504,091
Vulnerabilities assessment	-	**-**	30,000
Security upgrades	-	**10,960**	-
Equipment maintenance (Schedule 2)	818,000	**543,435**	524,174
Miscellaneous (Schedule 2)	216,000	**391,068**	216,000
Laboratory supplies and maintenance (Schedule 2)	172,500	**156,580**	164,289
Building and ground maintenance (Schedule 2)	216,500	**104,553**	103,164
Administration (Schedule 2)	57,000	**163,301**	48,469
	11,348,569	**11,439,402**	10,982,566
Deficiency of revenues over expenses before refundable surplus	(948,188)	**(722,433)**	(796,230)
(Surplus refundable) deficit owing from operations allocated as follows:			
City of Regina		**(15,995)**	115,461
City of Moose Jaw		**(3,101)**	21,910
Change in accumulated surplus		**(741,529)**	(658,859)
Accumulated surplus, beginning of year		**25,979,473**	26,638,332
Accumulated surplus, end of year		**25,237,944**	25,979,473

See accompanying notes.

Buffalo Pound Water Administration Board

STATEMENT OF RESERVE FOR REPLACEMENT OF CAPITAL ASSETS

[in dollars]

For the year ended December 31

	2013	2012
Balance, beginning of year	**1,917,686**	1,412,660
Contributions		
City of Regina capital contributions	**662,568**	632,088
City of Moose Jaw capital contributions	**128,468**	119,957
Interest earned (Note 4)	**28,663**	22,288
Expenditures from reserve for replacement of capital assets (Schedule 1)	**(150,726)**	(269,307)
Balance, end of year (Note 8)	**2,586,659**	1,917,686

See accompanying notes.

Buffalo Pound Water Administration Board

STATEMENT OF CHANGE IN NET FINANCIAL ASSETS

[in dollars]

For the year ended December 31

	2013	2012
Change in accumulated surplus	**(741,529)**	(658,859)
Acquisition of tangible capital assets	**(439,426)**	(626,995)
Amortization of tangible capital assets	**1,717,733**	1,764,694
Loss on the disposal of tangible capital assets	**148,759**	497
Proceeds from disposal	**-**	7,500
Surplus of capital expenses over expenditures	**1,427,066**	1,145,696
Acquisition of inventory of chemicals	**(2,029,721)**	(2,164,703)
Acquisition of prepaid expense	**(12,642)**	(12,632)
Consumption of inventory of chemicals	**2,001,526**	2,219,605
Use of prepaid expenses	**12,632**	1,500
(Deficit) surplus of expenses of other non-financial assets over expenditures	**(28,205)**	43,770
Increase in net financial assets	**657,332**	530,607
Net financial assets, beginning of year	**1,388,559**	857,952
Net financial assets, end of year	**2,045,891**	1,388,559

See accompanying notes.

Buffalo Pound Water Administration Board
STATEMENT OF CASH FLOWS
[in dollars]

For the year ended December 31

	2013	2012
OPERATING ACTIVITIES		
Change in accumulated surplus	**(741,529)**	(658,859)
Add back non-cash items		
Amortization of tangible capital assets	**1,717,733**	1,764,694
Loss on disposal of tangible capital assets	**148,759**	497
Net change in non-cash working capital balances		
in accounts receivable	**120,783**	155,598
in accounts payable and accrued liabilities	**(669,854)**	593,658
in 20% refundable rate	**77,981**	87,521
in surplus refundable	**156,468**	(251,779)
in employee benefits obligations	**(16,565)**	18,189
in inventory of chemicals and prepaid expenses	**(28,206)**	43,770
Cash provided by operating activities	**765,570**	1,753,289
CAPITAL ACTIVITIES		
Acquisition of tangible capital assets	**(439,426)**	(626,995)
Proceeds on disposal of tangible capital assets	**-**	7,500
Increase in cash position	**326,144**	1,133,794
Cash, beginning of year	**2,899,524**	1,765,730
Cash, end of year	**3,225,668**	2,899,524

See accompanying notes.

Buffalo Pound Water Administration Board

NOTES TO THE FINANCIAL STATEMENTS

[in dollars]

For the year ended December 31, 2013

1. BASIS OF OPERATIONS

The Buffalo Pound Water Administration Board (the Board) was formed under a 1951 agreement, amended in 1991, between the cities of Moose Jaw and Regina for the purpose of operating the water treatment facility at Buffalo Pound Lake to provide a water supply to the two cities at cost (the Agreement). Any surplus (deficit) in a particular fiscal year is distributed to (charged to) the cities according to their respective usage.

2. SIGNIFICANT ACCOUNTING POLICIES

The financial statements of the Board are the representation of management and have been prepared in accordance with Canadian public sector accounting standards, as recommended by the Chartered Professional Accountants of Canada (CPA Canada). Significant aspects of the accounting policies adopted by the Board are as follows:

Use of estimates

The preparation of financial statements in conformity with Canadian public sector accounting standards requires management to make estimates and use assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the year. Actual results could differ from those estimates.

Employee benefit obligations

Employee benefit obligations relating to severance or retirement benefits are recognized to the extent that they are vested and could be taken in cash by an employee on termination.

Pension benefit obligations

The Board is one of the sponsors of a multi-employer defined benefit pension plan. The Board follows defined contribution accounting under which pension expense is limited to the Board's contributions to the plan.

Inventory of chemicals

Inventory of chemicals are valued at the lower of net realizable value and average cost.

Capital contributions

The funding for capital assets is through one of two means, from the Reserve for Replacement of Capital Assets or through a separate funding agreement between the cities of Moose Jaw and Regina (the cities).

Article 3 of the Agreement between the cities requires an additional contribution from each city equal to 10% of the general water rate for every mega litre of water sold. This contribution funds the Reserve for Replacement of Capital Assets from which capital assets may be funded. For major capital projects that the reserve is unable to fund, a separate agreement between the two cities may be struck in order to provide funding for the project. Contributions from the cities under Article 3 of the Agreement or through a separate agreement are shown as capital contributions for financial statement purposes.

Buffalo Pound Water Administration Board
NOTES TO THE FINANCIAL STATEMENTS
[in dollars]

For the year ended December 31, 2013

2. SIGNIFICANT ACCOUNTING POLICIES (Continued)

Operating contributions

Under the terms of the Agreement, each city pays the Board for water and electricity used based upon the following rates established by the Board:

	2013	2012
General water rate, per mega litre	**225.02**	216.55
Electricity rate, per kilowatt hour	**0.07908**	0.07908

These revenues are recognized as the water is delivered to the cities' water distribution systems. Other revenues are recognized when earned and measurable.

Refundable water rate

Under Article 5 of the Agreement, the Board receives an additional 20% of the general water rate from the cities for every mega litre of water sold. At each fiscal year end, the proceeds of these payments are refunded in proportion to the cities' respective capital investment in the Board.

Financial instruments

The fair value of cash, accounts receivable, accounts payable and accrued liabilities, the 20% refundable rate and the surplus refundable/ deficit owing approximates the carrying value given their short term nature.

Tangible capital assets

Tangible capital assets are recorded at cost which includes all amounts that are directly attributable to acquisition, construction, development or betterment of the asset. The cost, less residual value, of the tangible capital assets are amortized on a straight-line basis over their estimated useful lives as follows:

General	
Land improvements	20 years
Vehicles and equipment	6 to 20 years
Office and information technology	10 to15 years
Infrastructure	
Plants and facilities	5 to 40 years
Roads	25 years

Assets under construction are not amortized until the asset is available for productive use.

Tangible capital assets received as contributions are recorded at their fair value at the date of receipt and also are recorded as revenue.

Leases are classified as capital or operating leases. Leases which transfer substantially all of the benefits and risks incidental to ownership of property are accounted for as capital leases and recorded as tangible capital assets. All other leases are accounted for as operating leases and the related lease payments are charged to expenses as incurred.

Credit Risk

Credit risk is the risk of financial loss to the Board if a customer or counterparty to a financial instrument fails to meet its contractual obligations. The Board's credit risk is primarily attributable to accounts receivable. This risk is limited as accounts receivable is due mainly from the City of Regina and the City of Moose Jaw.

Buffalo Pound Water Administration Board
NOTES TO THE FINANCIAL STATEMENTS
[in dollars]

For the year ended December 31, 2013

Liquidity risk is the risk that the Board will not be able to meet its financial obligations as they become due. The City of Regina staff on behalf of Buffalo Pound manages liquidity risk by continually monitoring cash flow requirements to ensure that it has sufficient funds to meet obligations when they become due. The Board has an agreement with the City of Regina and the City of Moose Jaw, where each billing cycle Buffalo Pound collects an additional 10% of the billable service cost of water purchase as a contribution to their capital reserve and an additional 20% for working capital funding.

Interest Rate Risk

Interest rate risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in the market interest rates. The Board is not exposed to significant interest rate risk.

3. NEW STANDARDS AND AMENDMENTS TO STANDARDS

The following new standards and amendments to standards, effective for annual periods on or after April 1, 2012, have been analyzed in preparing these financial statements:

PS 1201, Financial Statement Presentation
PS 2601, Financial Currency Translation
PS 3410, Government Transfers
PS 3450, Financial Instruments
PS 3510, Tax Revenue

The prospective adoption of these standards had no material impact on the financial statements. The Statement of Remeasurement Gains and Losses has been omitted as there were no relevant transactions to report.

4. RESERVE FOR REPLACEMENT OF CAPITAL ASSETS

The Statement of Reserve for Replacement of Capital Assets shows allocated interest to the Reserve of 28,663 (22,288 in 2012). This represents the interest earnings for the year and is transferred in accordance with Article 3 of the Agreement. The interest is calculated by applying the prescribed rate, being bank prime less 1.2%, to the average monthly reserve balance to a maximum of the actual interest earned on the funds.

5. EMPLOYEE BENEFIT OBLIGATIONS

The unfunded employee benefit obligations accrued at year end are as follows:

	2013	2012
Vacation pay	**177,338**	164,212
Vested termination payments	**265,446**	295,137
	442,784	459,349

Based upon an agreement with UNIFOR Local 595, termination payments for union employees vest after 15 years of service or upon retiring at the age of 65 after 10 years of continuous service. The amount payable on termination after vesting is 20 hours pay for each completed year of service.

For out-of-scope employees the termination payments vest after 10 years of service. The amount payable on termination after vesting is the wages the employee would have been paid had the employee worked for a time equal to their unused sick days on termination date. The maximum termination payment to an out-of-scope employee is 78 days pay.

Buffalo Pound Water Administration Board
NOTES TO THE FINANCIAL STATEMENTS
[in dollars]

For the year ended December 31, 2013

5. EMPLOYEE BENEFIT OBLIGATIONS (Continued)

Buffalo Pound Water Administration Board is a member of the City of Regina Civic Employees' Superannuation and Benefit Plan (the Plan), which is overseen by its own Administrative Board. All eligible permanent and probation employees of the Board are members of the Plan. This multi-employer Plan provides defined retirement benefits and is integrated with the Canada Pension Plan (CPP). The Plan provides a lifetime monthly pension based on an employee's years of service and the average of the best three consecutive years of earnings. For 2013 employees contributed 9.42% (2012 - 9.42%) of their earnings below the CPP maximum and 13.96% (2012 - 13.96%) of earnings above the CPP maximum and the Board matches employee contributions.

Preliminary financial statement projections as at December 31, 2013 indicate the Plan had a deficit (unfunded liability) of net assets available to pay accrued pension benefits of 117,911,000 (2012 - 251,510,000).

The Plan is a multi-employer defined benefit plan; therefore neither benefits nor contributions are segregated by employer. The Plan managers have been unable to determine the portion of any unfunded liability attributable to each employer. Accordingly, no portion of the deficiency has been recognized as a liability or expense in the financial statements. The Plan has been accounted for using the method appropriate for defined contribution plans and, as such, the amount of pension expense is equal to the contributions required for the year. Penson costs of 251,137 (236,497 in 2012) based on employer contributions were expensed during 2013.

Buffalo Pound Water Administration Board is a member of the Regina Civic Employees' Long-term Disability Plan (the Disability Plan). Preliminary financial statement projections as of December 31, 2013 indicate a surplus of net assets available for benefits of 21,727,000 (2012 - 14,054,000).

The Disability Plan is a multi-employer plan and consequently, identification of individual employer's assets is not available from the Disability Plan managers. Accordingly, no portion of the surplus has been recognized as an asset or expense reduction in the financial statements. Disability benefits are based on 65% of the member's salary and will be paid either throughout the duration of the disability, until the member elects voluntary early retirement, reaches age 65 or upon death, whichever occurs first. The Disability Plan has been accounted for using the method appropriate for defined contribution plans and, as such, the amount of benefit expense is equal to the contributions required for the year. Member contributions are made to the Plan at a rate of 0.92%, with the employer matching contributions. The Board recorded disability premium costs for 2013 of 19,973 (18,717 in 2012).

Dental and medical plans are also provided for most employees and are paid for by the Board.

6. TANGIBLE CAPITAL ASSETS

	NET BOOK VALUE	
	2013	2012
General		
Vehicles and equipment	**322,535**	354,728
Office and information technology	**23,601**	20,180
Infrastructure		
Plants and facilities	**22,724,085**	24,005,761
Assets under construction	**23,848**	140,467
	23,094,069	24,521,136

For additional information, see the Schedule of Tangible Capital Assets (Schedule 3). During the year there were no write-downs of assets (2012- $nil). In addition, there were no assets contributed to the Board (2012- $nil).

Buffalo Pound Water Administration Board
NOTES TO THE FINANCIAL STATEMENTS
[in dollars]

For the year ended December 31, 2013

7. CAPITAL INVESTMENT

The Capital Investment represents the contributions made by each of the cities under Article 3 of the Agreement, as well as those made under separate agreement, which have been used for capital purposes. Each City's investment is proportionate to the amount contributed. For additional information, see Capital Investment (Schedule 1).

	2013			2012
	Regina	**Moose Jaw**	**Total**	Total
Balance - beginning of year	**56,265,700**	**21,141,790**	**77,407,490**	77,138,183
Additions funded by:				
Reserve for replacement of capital assets	**111,462**	**39,264**	**150,726**	269,307
Balance - end of year	**56,377,162**	**21,181,054**	**77,558,216**	77,407,490

8. ACCUMULATED SURPLUS

Accumulated surplus represents the equity of an organization. In determining accumulated surplus, revenues and expenses are recognized as they are earned and incurred, according to Canadian public sector accounting standards as recommended by CPA Canada.

	2013	2012
Investment in tangible capital assets	**23,094,069**	24,521,136
Reserve for replacement of capital assets	**2,586,659**	1,917,686
Employee benefit obligations (Note 5)	**(442,784)**	(459,349)
Accumulated surplus	**25,237,944**	25,979,473

Buffalo Pound Water Administration Board **Schedule 1**

CAPITAL INVESTMENT

[in dollars]

For the year ended December 31

	2013	2012
Balance - beginning of year	**77,407,490**	77,138,183
Additions financed by reserve for replacement of capital assets		
Re-coating of archimedes screw pumps	-	149,000
Contactor flowmeters	**9,496**	-
Filter valve replacement	**3,916**	-
Instrumentation drawings	-	23,848
Security upgrades	**10,960**	-
Generator	**69,141**	-
Alum tank liner	**57,213**	-
Laboratory equipment	-	47,539
Vulnerabilities assessment	-	30,000
Truck	-	18,920
	150,726	269,307
Balance - end of year	**77,558,216**	77,407,490

Distribution of capital investment		
City of Regina	**56,377,162**	56,265,700
City of Moose Jaw	**21,181,054**	21,141,790
	77,558,216	77,407,490

Buffalo Pound Water Administration Board **Schedule 2**

SCHEDULE OF EXPENDITURES

[in dollars]

For the year ended December 31

	Budget (unaudited)	2013	2012
EMPLOYEE WAGES AND BENEFITS (SCHEDULE 2)			
Wages - permanent employees	2,395,600	**2,344,369**	2,124,949
Employee benefits - permanent employees	480,900	**434,286**	401,493
Overtime wages - permanent employees	115,700	**103,094**	87,037
WCB premiums	28,000	**20,931**	20,644
Premium pay - permanent employees	14,000	**15,254**	14,501
Car allowance	4,000	**8,123**	6,202
Clothing and boot allowance	3,000	**3,675**	2,225
Wages - casual employees	13,000	-	-
Employee benefits - vacation, sick and termination	-	**(16,565)**	18,189
Employee benefits - casual employees	-	-	3,379
Employee awards and gifts	-	**10,162**	-
	3,054,200	**2,923,329**	2,678,619
UTILITIES (SCHEDULE 2)			
Electricity	1,370,000	**1,404,152**	1,364,125
Natural gas	460,000	**440,693**	365,336
	1,830,000	**1,844,845**	1,729,461
CHEMICALS (SCHEDULE 2)			
Alum	1,248,500	**1,669,168**	1,738,699
Granular activated carbon	225,000	**162,895**	200,586
Chlorine	154,000	**138,953**	184,746
Powder activated carbon	100,000	**30,510**	95,574
	1,727,500	**2,001,526**	2,219,605
EQUIPMENT MAINTENANCE (SCHEDULE 2)			
Filtration plant	335,000	**184,294**	130,890
Wastewater system	170,000	**129,421**	164,392
Regeneration plant	140,000	**94,901**	108,310
Pump station	45,000	**46,779**	9,668
Computer and communications	40,000	**49,628**	67,261
High power electrical	78,000	**23,233**	30,996
Pipeline	10,000	**15,179**	12,657
	818,000	**543,435**	524,174

Buffalo Pound Water Administration Board **Schedule 2**

SCHEDULE OF EXPENDITURES (CONTINUED)

[in dollars]

For the year ended December 31

	Budget (unaudited)	2013	2012
MISCELLANEOUS (SCHEDULE 2)			
Insurance	65,000	**66,252**	57,474
General supplies	25,000	**12,733**	22,425
Telephone	16,000	**15,033**	14,416
Professional and membership fees	24,000	**21,778**	18,388
Travel and conventions	23,000	**23,504**	19,773
Maintenance - vehicles	22,000	**27,115**	39,106
Stationary and office supplies	21,000	**21,834**	24,987
Advertising	-	**719**	844
Education and training	15,000	**13,012**	11,583
Contracted services	5,000	**47,966**	5,042
Livingston audit credit	-	**(7,960)**	-
Software maintenance	-	**447**	-
Tangible capital asset (gain)/loss	-	**148,759**	497
Foreign exchange (gain)/loss	-	**(124)**	1,465
	216,000	**391,068**	216,000
LABORATORY SUPPLIES AND MAINTENANCE (SCHEDULE 2)			
Laboratory supplies	67,000	**71,233**	68,829
Accreditation program and research	54,500	**48,046**	46,704
Laboratory equipment	42,000	**29,683**	39,656
Contract analytical	9,000	**7,618**	9,100
	172,500	**156,580**	164,289
BUILDING AND GROUND MAINTENANCE (SCHEDULE 2)			
Filtration plant	150,000	**92,818**	93,211
Regeneration plant	26,500	**9,109**	7,543
Lake pump station	40,000	**2,626**	2,410
	216,500	**104,553**	103,164
ADMINISTRATION (SCHEDULE 2)			
City of Regina administration	32,000	**32,600**	29,100
Board expenses	13,000	**117,681**	9,368
Audit services	12,000	**13,020**	10,001
	57,000	**163,301**	48,469

Buffalo Pound Water Administration Board **Schedule 3**

SCHEDULE OF TANGIBLE CAPITAL ASSETS

[in dollars]

For the year ended December 31

	General			Infrastructure				
	Land Improvements	Vehicles and Equipment	Office and Information Technology	Plants and Facilities	Roads	Assets Under Construction	2013	2012
Cost								
Beginning of year	11,373	983,488	25,055	77,510,760	2,321	140,467	**78,673,464**	78,083,789
Add:								
Additions during year	-	24,206	6,011	409,209		-	**439,426**	626,995
Transfers from assets under construction	-	-	-	116,619		(116,619)	-	-
Less:								
Disposals during year	-	-	-	314,602	-	-	**314,602**	37,320
End of year	11,373	1,007,694	31,066	77,721,986	2,321	23,848	**78,798,288**	78,673,464
Accumulated amortization								
Beginning of year	11,373	628,760	4,875	53,504,999	2,321	-	**54,152,328**	52,416,957
Add:								
Amortization	-	56,399	2,590	1,658,744	-	-	**1,717,733**	1,764,694
Less:								
Accumulated amortization on disposals	-	-	-	165,842	-	-	**165,842**	29,323
End of year	11,373	685,159	7,465	54,997,901	2,321	-	**55,704,219**	54,152,328
Net Book Value	-	**322,535**	**23,601**	**22,724,085**	-	**23,848**	**23,094,069**	24,521,136

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